ELECTRIFYING MEXICO:
CULTURAL RESPONSES TO A NEW TECHNOLOGY, 1880S-1960S.

by

Diana Jeaneth Montaño García

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ABSTRACT

Electricity played a central role in imagining and crafting Mexico's path to modernity from the late nineteenth to the mid-twentieth centuries. Since the late 19th century, Mexican officials pursued the goals of order and progress, enrolling science and technology to help rationalize and modernize the nation, its economy, and society. The electrification of the country's capital was seen as a crucial step in bringing it to the level of modern European and American cities. Electricity as a primary engine of modern society permeated all aspects of life traversing histories of the city, transportation, labor, business, engineering, women, agriculture, medicine, death, public celebrations, nightlife, advertising, literature, architecture, to name a few. Taking technology as an extension of human lives, I argue that in their everyday life, in public and private spaces, government officials, technocrats, lawyers, doctors, business owners, housewives and ordinary citizens both sold and consumed electricity. They did so by crafting a discourse for an electrified future; and by shaping how the new technology was to be used. I examine newspapers, cookbooks, novels, women's magazines, traveler's accounts, memoirs, police, government and company records, and to show how by debating, embracing, rejecting, and appropriating this technology, Mexicans actively shaped their country's quest for modernity.

INTRODUCTION:
Capturing the beautiful stranger

Mexican President Porfirio Díaz, along with top-ranking cabinet officers, and military generals arrived at the National Preparatory School to inaugurate the Electricity Exposition on December 15, 1886. Proclaimed as the first scientific exposition held in the country, it was meant to introduce the public to electricity, that "beautiful stranger," "the mysterious fairy," "the unpossessed virgin."[1] It announced to the United States and European countries that Mexico, thanks to the social order brought about by the Díaz administration, had entered on the path of progress based on public instruction. At the National Preparatory School, attendees entered a small room lavishly lighted with incandescent lights where they were greeted by an aquarium also lighted with Edison bulbs.[2] Inside the sixteenth century building, individuals found diverse electrical devices in displays dedicated to magnetism, static electricity, telegraph and others. Students provided the public with detailed explanations and operated these devices, some of them by Mexican inventors.[3] The largest number of spectators gathered around Welch and Hughes printers placed in the telegraph department. After seeing them in operation, many happily walked away with a piece of printed-paper as souvenir.

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[1] Press coverage of the exposition made ample use of allegorical language. These included articles by poet and writer Manuel Gutierrez Nájera, "Humoradas dominicales," *El Partido Liberal*, 19 December 1886 and "En la Exposición de Electricidad," *El Partido Liberal*, 30 December 1886; gendered female accounts, see *El Siglo Diez y Nueve*, 3 January 1887; and those whose exaggerated flowery lexicon was subsequently ridiculed, see "Toques," *La Voz de México*, 14 January 1887 on "Ecos de la Exposición de Electricidad," *Diario del Hogar*, Part I, 12 January 1887 and Part II, 15 January 1886.

[2] "Miscelánea: De curiosidades, pensamientos, y conocimientos útiles," *El Economista Mexicano*, Vol. II, No. 21, 24 December 1886, pp. 245-247.

[3] When plans for the exposition were made public, the catholic daily *El Tiempo* welcomed the idea and called on the government to dedicate more funds to fostering and protecting scientific endeavors that were to give the country a name for itself. See "La próxima exposición de electricidad," *El Tiempo*, 22 August 1886.

The scientific fiesta dedicated to the invisible god literally shocked the public. Daring attendees looking for a more intimate and direct experience with electricity received an unexpected *susto* (scare) through an appealing and deceitful device. Every night a popular experiment offered an opportunity to experience an electric charge firsthand.[4] Its demonstration called for a group of individuals to stand in a circle holding hands, thus forming a human chain. At one end, an individual held the *botella de Leyden* (Leyden jar), a glass jar with its inner and outer surfaces coated with metal foil and a cork or wooden lid with a copper wire running through it.[5] This wire was connected to an electrostatic generator, or another source of electric charge, allowing energy to build up in the interior layer as the insulating glass blocked it from further movement. The outer surface remained grounded. A pathway had to be created along which the stored energy could travel. Communication could be established via a wire, rod or a human hand. Electrical demonstrations such as the ones held nightly at the Exposition preferred the latter given its longstanding popularity in scientific gatherings.[6] Having the person standing on the other end of the human chain touch the foil-coated bottom of the same jar

[4] "Notas eléctricas," *El Tiempo*, 22 December 1886.

[5] This experiment was of fundamental importance in the study of electricity. Early jars were initially filled with water, and some even with beer, as it was believed that it was the liquid in the jar what stored electricity. Experimentation scientists such as Benjamin Franklin and William Watson improved the Leyden jar by eliminating the water and by extension the moisture associated with it. J. A. Leo Lemay, *The Life of Benjamin Franklin, Volume 3: Soldier, Scientist, and Politician, 1748-1757* (Philadelphia: University of Pennsylvania Press, 2008), pp. 72-73.

[6] For the popularity of the Leyden jar in electrical demonstrations in the eighteenth century see Lemay, *The Life of Benjamin Franklin*.

with her free hand completed the pathway.[7] Electricity would then flow through each member of the chain, each of them receiving the "gift of an electric shock."[8]

Justo Sierra, Minister of Education, officially inaugurated the exposition with a passionate speech. "This country," he argued, "has everything to hope for from science, from the transformation of nature. In this land with no fossil fuel [resources], all industrial potential has to be created. Electricity is the answer."[9] Through the Exposition, electricity had acquired Mexican nationality and he hoped the students at the *Prepa* would study it with profound passion, in order to "strip off her secrets and…reveal them to us transformed in mechanical power that will rekindle our sources of wealth and will place them in global circulation in order to solve the problem of our destiny."[10] Minister Sierra then flipped an electric switch to open the school's sixteenth century door and invited President Díaz and the rest of the audience to enter the exhibition.[11] For the next

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[7] Clergyman and physicist Jean-Antoine Nollet, reputed to have coined the term 'Leyden jar,' is recognized for popularizing science in France. He performed this demonstration before King Louis XV with 180 soldiers forming a human chain at Versailles. At the King's request he repeated the impressive demonstration in Paris with 700 monks. See Lewis Pyenson and Jean François Gauvin, Eds., *The Art of Teaching Physics: The Eighteenth Century Demonstration Apparatus of Jean Antoine Nollet*. (Sillery, Quebec: Septentrion, 2002). For the use of spectacular demonstrations in exhibiting the potential of electricity see K. G. Beauchamp, *Exhibiting Electricity* (London: The Institution of Electrical Engineers, 1997); James Delbourgo, *A Most Amazing Scene of Wonders: Electricity and Enlightenment in Early America* (Cambridge: Harvard University Press, 2006); Iwan Rhys Morus, *Frankenstein's Children: Electricity, Exhibition and Experiment in Early-Nineteenth-Century London* (Princeton: Princeton University Press, 1998); and Judith A. Adams, "The Promotion of New Technology Through Fun and Spectacle: Electricity at the World's Columbian Exposition," *Journal of American Culture,* 18:2, (1995), pp. 45-55.

[8] This experiment demonstration was applauded as one of the Exposition's ways of popularizing science. See *El Diario del Hogar*, 19 December 1886; and "Notas eléctricas," *El Tiempo*, 22 December 1886.

[9] "Discurso enunciado por el Sr. Lic. Justo Sierra, la noche del 15 de Diciembre de 1886, con motivo de la inauguración de la Exposición de Electricidad de la Escuela Nacional Preparatoria," *El Partido Liberal*, 24 December 1886.

[10] Ibid.

[11] "La Exposición de Electricidad en la Escuela N. Preparatoria," *El Tiempo*, 17 December 1886.

14 days, leading men of science offered public lectures to educate the public on the growing subject of electricity.[12]

Exhibiting the invisible God

Electricity demonstrations had been hosted by the country's capital since the mid nineteenth century when a public trial of electric lighting was carried out in the Zócalo.[13] The second trial at the Palace of Mines before prestigious guests, including President José Joaquín de Herrera, was loudly praised by a number of voices from the press. The country, they echoed, was to become, in a short time, a grand and modern place if exhibitions of interesting innovations, such as the telegraph and electric lighting, were introduced more often.[14] Public exhibitions of scientific nature continued to arouse interest in the following decades. In 1882, for instance, municipal authorities granted a permit to William Axford to set up a tent in the proximity of the Zócalo to exhibit the hatching of eggs by electricity.[15] The city council commission on *mercados y espociones* [sic], accepted Axford's proposal to provide this scientific entertainment to the country's illustrious public, as it was deemed worthy of the ayuntamiento's support of undertakings that sought to entertain and instruct the public.[16] *The Two Republics*, the city's English-

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[12] For the complete program see "Exposición de electricidad," *El Tiempo*, 14 December 1886.

[13] "Primeros ensayos públicos de la luz eléctrica en la Republica Mexicana," *Quipu*, Vol. 4, No. 1 (Jan.-Apr. 1987), pp. 71-80.

[14] *El Siglo Diez y Nueve*, 19 November 1850.

[15] Axford's standing in the incubator industry was recognized with a gold medal at the Association of Toronto's 187th Industrial Exhibition. See *The Poultry World*, Vol. 10, No. 3 (March 1881), p. 91.

[16] Archivo Histórico del Distrito Federal (AHDF), Collection: Ayuntamiento Gobierno del Distrito Federal, Section: Diversiones Públicas, 802/648/1882.

language daily, considered the show a clear example of the triumph of science over matter, which in this case had completely dispensed the role of the mother hen.[17]

By the 1880s, concerted efforts made by educational institutions and government authorities to showcase the potential of electricity through exhibitions on behalf of the country's future materialized in a political context that for the first time allowed for long-term planning. Mexico had been entangled in a cycle of political and economic chaos[18] during the first sixty years of its history as an independent country that had intensified by civil wars, foreign invasions and the loss of half of its territory.[19] Chief among the struggles of its nineteenth century economy were the detrimental consequences of the wars of independence to the country's infrastructure coupled with its geography, in terms of transportation costs, and the overall political instability that ensued.[20] One of the hardest hit sectors of the economy was mining. Foreign travellers penned down vivid and detailed accounts of the devastating consequences of the wars of independence on mining

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[17] The Axford and Brothers firm, which hailed from Chicago, was to remain in the capital for a month expecting to bring to life about 3000 chickens. "Egg hatching by electricity," *The Two Republics*, 26 March 1882. Opinions on incubators abroad also considered hens for hatching obsolete. See E. E. Bishop, "Hens for hatching, a thing of the past," *The Poultry World*, Vol. 10, No. 3 (March 1881), pp. 75-76.

[18] This relationship between political instability and economic stagnation has been described as a vicious circle that kept productive investment and the overall growth potential of the economy at low levels. See Beatty, E. *Institutions and Investment: The Political Basis of Industrialization in México before 1911*. (Stanford: Stanford University Press, 2001).

[19] Barbara A. Tenenbaum, *The Politics of Penury: Debt and Taxes in Mexico 1821-1856* Albuquerque: The University of New Mexico Press, 1986). A recent study that extends to the 1880s shows that the burden of foreign debt had a dramatic impact in the depression of foreign investments, which worked to reduce its economic growth and to forestall its industrialization and modernization. Richard J. Salvucci, *Politics, markets and Mexico's 'London debt,' 1823-1887*. (Cambridge: Cambridge University Press, 2009).

[20] Juan Carlos Moreno-Brid and Jaime Ros, *Development and growth in the Mexican economy: a historical perspective*. (Oxford: Oxford University Press, 2009); John H. Coatsworth, "Obstacles to economic growth in nineteenth-century Mexico," *The American Historical Review*, Vol. 83, No. 1 (Feb., 1978), pp. 80-100.

undertakings around the country.[21] This sector, although accounted for only 8.2% of the gross domestic product (GDP) at the turn of the nineteenth century, had a more prominent role in the market economy compared to that of the agriculture sector, which compromised 44.4% of the GDP, given the predominance of subsistence farming.[22] Thus, the true role of mining activity in the market economy it is said to be found between 16% and 27%. Furthermore, its weight becomes more pronounced once backward and forward linkages to other areas of the economy (agriculture, manufacturing) as well as services (finance, transportation, and retail) are considered. Until the 1860s, mining activities lagged behind, failing to induce economic expansion as it had during the colonial period.

After independence governments sought to develop the nation's textile industry. The establishment of a national credit bank (Banco de Avío) and the prohibition of foreign cotton imports were among the efforts to stimulate it.[23] Lax enforcement of laws along with the porous nature of the border with United States, where cheap, slave-grown cotton found its way south of the international divide, worked to undermine protectionist economic policies. Scarce sources of coal and pricey transportation costs that ruled out the use of steam power, which along with the lack of raw cotton resulted in the use of

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[21] Joel Roberts Poinsett, *Notes on Mexico, Made in the Autumn of 1822* (Philadelphia: H.C. Carey and L. Lea, 1824); Henry George Ward, *Mexico in 1827*. (London: H. Colburn, 1828).

[22] Ibid, pp. 20-21.

[23] On the implementation of these elements in the national economic policy see Mikael Wolfe, "Water and Revolution: The Politics, Ecology and Technology of Agrarian Reform in 'La Laguna," Mexico," (Ph.D Dissertation, The University of Chicago, 2009), pp. 84-86.

only 50 percent of the industry's installed capacity, were among the roadblocks for the development of the industry after the 1840s.[24]

The recovery the mining sector experienced during the 1860s has been identified as a paramount component in the country's economic growth resurrection. The revitalization of mining activities was the combined result of the gradual domestic investments that had been pouring in the preceding decades and the consequent discovery of new, rich deposits of precious metals.[25] That of silver mining, in particular, has been pinpointed as the key element in bringing to an end the crisis of liquidity and the credit crunch that had plague the economy since the turn of the century. This sent demands for products and services across the widespread backward and forward linkages of the industry.

The arrival of General Porfirio Díaz to the presidency (1876 to 1910) delivered the long-desired peace and order that allowed government officials to craft a modern country. With the consolidation and expansion of the central government, and the adoption of the positivist doctrine that gave priority to science and progress, the Díaz administration embarked on a series of projects aimed at modernizing the country, attracting foreign investment and inserting the nation into the global capitalist economy.[26] The regime

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[24] Ibid, 87. Wolfe notes that this also limited the location of textile mills to areas adjacent to water sources. Statistical data shows only two mills powered by steam in 1843 out of a grand total of fifty-nine. Whereas thirty-four were hydraulic, fourteen animal and nine completely human powered.

[25] Moreno-Brid and Ros, *Development and growth,* p. 38.

[26] On foreign investment see David M. Pletcher, *Rails, mines, and progress: Seven American promoters in Mexico, 1867-1911*. (Ithaca, N.Y: Cornell University Press, 1958); William Schell, *Integral Outsiders: The American Colony in Mexico City, 1876-1911*. (Wilmington, Del: Scholarly Resources, 2001); John M. Hart, *The silver of the Sierra Madre: John Robinson, boss Shepherd, and the people of the canyons*. (Tucson: University of Arizona Press, 2008); and Christopher Armstrong and Vivien H. Nelles, "La empresa corporativa en el sector de servicios públicos: el desempeño de las compañías canadienses en Mexico y en Brasil, 1896-1930," in Carlos Marichal, Ed., *Las inversiones extranjeras en América Latina, 1850-1930: Nuevos debates y problemas en historia económica* comparada. (Mexico City: El Colegio de Mexico, Fideicomiso Historia de las Américas, Fondo de Cultura Económica, 1995), pp. 125-144. On the growing links to the world economy see Allen Wells, *Yucatán's Gilded Age: Haciendas, Henequen, and*

placed its faith on scientific discoveries and technological innovations, which once adopted were to create inevitable progress.[27]

Electricity by the late nineteenth century stood as an unparalleled international symbol of technical achievement and a visible analogy for the ideology of progress.[28] The social and economic consequences unleashed by the electric revolution took the world by storm. Mexico, although not a leading actor in the revolution, answered the call and by 1889 boasted a report on the development of the new technology across the country.[29] Its application doted the national territory providing much-needed power to mining, textile, and other industrial activities, as well as public lighting. In the country's capital, electrification projects were seen as crucial steps in bringing it to the level of modern European and American cities. The employment of electricity as both the symbol and the means for an industrialized future, echoed in Justo Sierra's address, remained central in the country's history for the next century.

International Harvester, 1860 -1915. (Albuquerque: University of New Mexico Press, 1985); Mark Wasserman, *Capitalists, Caciques, and Revolution: The Native Elite and Foreign enterprise in Chihuahua, Mexico, 1854-1911* (Chapel Hill: University of North Carolina, 1984). On the ecological regional transformations of these linkages see Sterling Evans, *Bound in twine: The history and ecology of the henequen-wheat complex for Mexico and the American and Canadian plains, 1880-1950*. (College Station: Texas A&M University Press, 2007); and Wolfe, "Water and Revolution."

[27] Faith in science and technology was professed before the Porfiriato. Reassessment of the era of Santa Anna demonstrates that the political elite, the *hombres de bien*, from both ideological camps, conservative and liberal, as a class shared the belief that the country's prosperity was inevitably linked to a progressive and scientific industry. There were, nevertheless, cautionary calls on both camps that such development should not to depend entirely on foreign investment or foreign ownership. See William Fowler, "Dreams of Stability: Mexican Political Thought during the 'Forgotten Years.' An Analysis of the Beliefs of the Creole Intelligentsia (1821-1853)," *Bulletin of Latin American Research*, Vol. 14, No. 3 (Sept., 1995), pp. 287-312.

[28] David E. Nye, *Electrifying America: Social Meanings of a New Technology*. (Cambridge, Mass.: MIT Press, 1990), p. 35.

[29] Compiled by Albert Best, former student of the National Preparatory School, who had also been one of the lecturers during the 1886 Electricity Exposition. *Noticia sobre las Aplicaciones de la Electricidad en la Republica Mexicana*. (Mexico City: Impresora de la Secretaria de Fomento, 1889).

To understand Mexico's history, particularly its embrace of technology in its quest for modernity, I examine the relationship between electricity and society in the capital. Electricity played a central role in imagining and crafting the country's path from the 1880s to the mid-twentieth century. Taking technology as an extension of human lives, I describe how in their everyday life, in public and private spaces, government officials, businesspeople, social commentators, inventors, doctors, electrical workers, domestic advisors, housewives and ordinary citizens both sold and consumed electricity. They did so by crafting a discourse for an electrified future; and by shaping how the new technology was to be used. I demonstrate that by debating, embracing, rejecting, and appropriating this technology, Mexicans actively shaped their country's technological quest for modernity.

My study looks at how electricity entered everyday life in the country's capital and how its users in public and private spaces shaped this process. This construction was not only tangible but also symbolic. That is, ideas about what electricity was, its nature and effects, its proper and potential use, as well as visions of an electrified future were formulated, presented and debated across different stages (both spatial and temporal) by a diverse number of historical actors. In doing so, these ideas and visions were oftentimes in communication with those developed abroad, but in no regards were they scripts imported wholesale.

The Leyden jar experiment held at the Electrical Exposition becomes a useful metaphor for the present study. The experiment had been developed and perfected abroad. By the time it arrived it had not only proven its popularity in scientific gatherings, but it was praised as a didactic tool for popularizing science and presenting

the potential of electricity to the public. The experiment called for the participation of individuals, who had to stand in a circle holding hands. Members of the public were called upon to participate.

At the Exposition, the experiment was carried out inside National Preparatory School, housed inside the San Ildefonso building, a sixteenth-century Jesuit boarding school that had been confiscated by liberal governments alongside many formerly Church-owned properties in the aftermath of the War of the Reform.[30] The triumph of the liberals over the Second Empire, translated into a fatal blow to an alternative national project backed by the conservatives and the Church. The building itself, then, stood as proof of the advances made in the nation's secularization path. The inaugural speech by Minister Sierra granting citizenship to electricity inside the former religious architecture reinforced the regime's acceptance of the invisible God, and by station its faith in science and reason, placing the country's future in its hands.[31]

Each of the individuals standing in the circle was crucial in completing the electric circuit. The current could not flow through each member, from the first to the last, without them holding hands and passing on the invisible energy. They stood, then, in a circle with the first individual holding the jar and the last person in the human chain touching the bottom of the jar with her/his free hand. Once the free hand touched the jar, the energy trapped inside the jar had a pathway to travel on, and did so having each of those in the circle physically feel an electric shock. Their participation made the

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[30] Robert Knowlton, *Church property and the Mexican Reform, 1856-1910*. (DeKalb: Northern Illinois University Press, 1976); Jan Bazant, *Alienation of church wealth in Mexico social and economic aspects of the liberal revolution, 1856-1875*. (Cambridge, England: University Press, 1970).

[31] The Exposition received a symbolic blessing with a visit by Archbishop Pelagio Labastida y Dávalos, which was described as "paying homage to progress and science." *El Correo de las Doce*, 30 December 1886.

experiment possible. As participants they experienced electricity in an intimate way, as they had been instrumental in liberating the transformative energy inside the jar.

This study contends that Mexicans were the pathway on which the electrification process of the city traveled. Through direct participation they unleashed the technology's transformative energy unto public and private spaces. In their active interaction they became "electrifying agents" as they first crafted a discourse for an electrified future and second, by shaping its consumption. These electrifying agents of modernity, I argue, promoted and created both imaginary and tangible notions of electricity.

Tools of progress

Recognizing modernization as a fundamental process operating at a level far deeper and more insistent than the desire of transitory political regimes,[32] recent works on modern Mexico view this process not only across a continuum stretching back to the Bourbon era (1734-1810) of the colonial period through the present day, but also as a cultural, economic and political process. A reassessment of the traditional periodization defined by political events has allowed the exploration of continuities between the colonial and the national period, the liberal period (1857-1910), the Revolution (1910-1940) and the post-revolutionary period. In the last two decades, cultural historians have taken great strides to document and analyze late nineteenth century and early twentieth century governmental efforts that sought to modernize public spaces and public behavior.

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[32] Steven B. Bunker, "Creating Mexican Consumer Culture in the Age of Porfirio Díaz, 1876-1911," (PhD diss., Texas Christian University, 2006), p. 21; Examples of such works include, William E. French, *A peaceful and working people: manners, morals, and class formation in northern Mexico*. Albuquerque: University of New Mexico Press, 1996; and Claudia Agostoni, *Monuments of Progress: Modernization and Public Health in Mexico City, 1876-1910* (Calgary: University of Calgary Press, 2003).

Expectations of electricity's potential emerged in a context of increasing enthusiasm that the order established by the Porfirian regime could bring about much-desired material progress. This was reinforced with the coming to fruition of large-scale projects that had long been in the plans but had failed to materialize. The most iconic of these was the dramatic development of the railway system. There were 640 kilometers of track in place when President Díaz rose to power and over 19,000 kilometers when he stepped down.[33] Beyond uniting the country and linking isolated production zones to markets and ports,[34] the penetration of the iron horse was vital to the regime's efforts to construct a modern, civilized citizenry with a shared national identity.[35]

Urban and regional infrastructure was in dire need of attention. The certainty of floods during the rainy season had made the capital a highly insalubrious city, an impediment to progress. Deemed as one of the most important material improvements the drainage project called upon science and technology to place nature under control. The Gran Drainage project, completed in 1901, stood as proof of how the regime had "naturalized modernity" by calling on scientific ideas about engineering nature and bringing the unruly waters under control.[36] Besides providing much awaited material

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[33] For a discussion of this development see Francisco Calderón, "Los Ferrocarriles," in Daniel Cosío Villegas, Ed., *La Historia Moderna de México: El Porfiriato, La vida ecónomica*. (Mexico City: Editorial Hermes, 1955), pp. 483-634.

[34] On the economic growth spurred by railroad development see John H Coatsworth, *Growth against Development: The Economic Impact of Railroads in Porfirian Mexico* (DeKalb: Northern Illinois University Press, 1981). For a revision of Coatsworth's stand on uneven development see Sandra Kuntz-Ficker, *Empresa extranjera y Mercado interno: El Ferrocarril Central Mexicano, 1800-1907*. (Mexico, DF: El Colegio de Mexico, 1995).

[35] Michael A. Matthews, *The Civilizing Machine: A Cultural History of Mexican Railroads, 1876-1910*. (Lincoln, NE: University of Nebraska Press, 2013).

[36] On the manipulation of nature during the Porfirian regime see Emily Wakild, "Naturalizing Modernity: Urban Parks, Public Gardens and Drainage Projects in Porfirian Mexico City," *Mexican Studies/Estudios Mexicanos*, Vol. 23, Issue 1, (Winter 1007), pp. 101-123.

benefits (floods, disease, etc.), the mega project delivered the important message that the government was capable of solving the ancestral problems of the city and thereby, fully able to exercise control over its destiny.[37] This in turn allowed the regime to garner legitimacy as an authentic and effective promoter of material progress, despite lacking that of a democratic nature.[38]

The execution of the Gran Drainage project highlights the regime's commitment to national development via the employment of overseas technology and expertise. Led by the public works contractor Weetman Pearson, one of the most influential and successful British businessmen in the country, the project succeeded in reigning in the waters in record time.[39] After a history of failed attempts to keep the waters at bay, this accomplishment cemented a fruitful relationship between the regime and the contractor.[40]

The employment of drastic engineering measures to address urban problems gave city planners an aura of cosmopolitanism. Scientific and technological approaches, and the constant promotion of its contributions to the country's civilizationary path, served to legitimize the regime's positivist underpinnings.[41] Indeed, the publicizing of these by city

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[37] Manuel Perló Cohen, *El paradigma porfiriano: historia del desagüe del Valle de México*. (Mexico, DF: Miguel Ángel Porrúa: Programa Universitario del Estudios sobre la Ciudad, Instituto de Investigaciones Sociales, 1999) p. 27.

[38] Ibid. For the regime's concerted effort to uphold the appearances of democratic forms see Paul H. Garner, *Porfirio Díaz, president of Mexico*. (London: Routledge, 2001), pp. 80-82

[39] On Pearson's close relationship with the regime see Priscilla Connolly, *El contratista de Don Porfirio: obras publicas, deuda y desarrollo desigual*. (Zamora, Mich.: El Colegio de Michoacán, 1997).

[40] A recent study challenges the view that interpreted this relationship as a Faustian pact between the country's corrupt elite and the predatory foreigners to ransack the nation's economic resources. Paul H. Garner, *British Lions and Mexican Eagles*: *Business, Politics, and Empire in the Career of Weetman Pearson in Mexico, 1889–1919*. (Stanford: Stanford University Press, 2011).

[41] The classical work on positivism remains Léopoldo Zea. *El positivismo en* Mexico. (Mexico, DF: El Colegio de México, 1943). For a discussion of anti-positivism see "Porque 'un alfiler puede

planners, sanitary engineers and public health officials constrained public debate away from one that delved into the systematic sources of social inequalities and disease.[42] This emphasis on the technological, educational and scientific solutions to issues of public health has been compared to as placing a "veil over the social contradictions" of the regime's modernizing roadmap.[43]

The goal of public works to make evident, visible, and palpable a cosmopolitan city went hand-in-hand with attempts to reshape what were considered health endangering social practices of its inhabitants.[44] In other words, these efforts went far beyond inscribing symbols of material progress onto the city's buildings and boulevards[45] or crafting a modern image of the nation for the consumption of World's Fair attendees.[46] It

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reventar un globo…' José María Vigil y el positivismo mexicano," *Estudios Sociológicos*, Vol. 28, No. 83 (May-Aug. 2010), pp. 561-577.

[42] Agostoni, "*Monuments of Progress.*" She argues that the transformation of the city's image and sanitary conditions can be traced back to the late eighteenth century when a critical perception permeated both policies and programs. For efforts to renovate and reshape public spaces in the late colonial period see Sharon Bailey Glasco, *Constructing Mexico City: Colonial conflicts over culture, space and authority*. (New York, Palgrave Macmillan, 2010); Pamela Voekel, "Peeing on the Palace: Bodily Resistance to Bourbon Reforms in Mexico City," *Journal of Historical Sociology* 5, No. 2 (June 1992): 183-208; and Juan Pedro Vilqueira Albán, *¿Relajados o Reprimidos? Diversiones públicos y vida social en la ciudad de México durante el Siglo de las Luces*. (Mexico City: Fondo de Cultura Económica, 1987).

[43] Ibid, 155-156.

[44] William H. Beezley, *Judas at the Jockey Club and Other Episodes of Porfirian Mexico* (Lincoln, NE: University of Nebraska Press, 1987); William H. Beezley, Cheryl English Martin, and William E. French, Eds., *Rituals of rule, rituals of resistance: public celebrations and popular culture in Mexico*. (Wilmington, Del: SR Books, 1994); French, "*A Peaceful and Working People.*"

[45] On the transformation of the capital for the celebration of the country's centennial of independence see Barbara A. Tenenbaum, "Streetwise History: The Paseo de la Reforma and the Porfirian State, 1876-1910," in William H. Beezley, Cheryl English Martin, and William E. French, Eds., *Rituals of Rule, Rituals of Resistance: Public Celebrations and popular culture in Mexico*. (Wilmington, DE: Scholarly Resources, Inc., 1994), pp. 127-150; and Mauricio Tenorio Trillo, "1910 México City: Space and Nation in the City of the *Centenario*," in William H. Beezley and David Lorey, Eds. *¡Viva México! ¡Viva La Independencia! Celebrations of September 16,* (Wilmington, DE: SR Inc., 2001), pp. 167-197.

[46] Mauricio Tenorio-Trillo, *Mexico at the World's Fairs: Crafting a modern nation*. (Berkeley: University of California Press, 1996).

also meant restricting everyday public behavior. Scholarship on public festivities, public health, class, crime and prostitution have begun to unveil the ways in which government officials and professionals recognized and tried to transform public habits and behaviors that were charged with slowing inevitable progress.[47]

Opposed to displays of disorder, Porfirians went about inscribing modernity not only unto the city's buildings and boulevards, but also by restricting public behavior by regulating public festivities. Flaunting their modernism, Porfirians strove to regulate the long-established custom of burning Judas effigies on Holy Saturday as they stood as backward, even primitive habits, that had no place in a cosmopolitan city.[48] As those celebrations were pushed away from the city center and towards those neighborhoods associated with crime and poverty, they were replaced with flowery wards and bicycle parades, which were to show the nation's modern character.

Although technology enabled most of the eye-opening cosmopolitan transformations of the Mexican *belle époque*, relatively few works have looked at how technology was used to alter the cityscape, and fewer are those that study how technology altered public behavior and how users transformed the former. This study does so in engagement with the rich cultural, legal, political, social, and scientific history of urban

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[47] Ricardo Pérez Montfort, Alberto del Castillo Yurrita, and Pablo Piccato, *Hábitos, normas y escándalo: prensa, criminalidad y drogas durante el porfiriato tardío*. (México, D.F.: Ciesas, 1997); Robert Buffington, *Criminal and Citizen in Modern Mexico* (Lincoln: University of Nebraska Press, 2000); Pablo Piccato, *City of Suspects: Crime in Mexico City, 1900-1931* (Durham: Duke University Press, 2001); Elisa Speckman-Guerra, *Crimen y castigo: legislación penal, interpretaciones de la criminalidad y administración de justicia, Ciudad de México, 1872-1910* (México: El Colegio de México, 2002); James Alex Garza, *The imagined underworld: sex, crime, and vice in Porfirian Mexico City*. (Lincoln: University of Nebraska Press, 2007); María Aurea Toxqui Garay, ""El recreo de los amigos." Mexico City's pulquerías during the liberal Republic (1856-1911)," (Ph.D. diss., The University of Arizona, 2008); Diego Pulido Esteva, "¡A Su Salud! Sociabilidades, Libaciones y Prácticas Populares en la Ciudad de México a Principios del Siglo XX," (Ph.D. diss., Colegio de México, 2012).

[48] Beezley, *Judas at the Jockey Club*, p. 107.

modernization in Latin America and contributes to it by illuminating how technology, in this case electricity, was employed and fashioned in crafting the discourse of modernity.[49] While the study of science has received substantial attention, works that take technology as a subject of social historical analysis are making good progress.[50]

The study of technology in the construction of modern Mexico has attracted a growing number of investigators. Scholarship on the railroad, radio, automobiles, mechanical and electrical engineering, among others, have begun to reveal the ways in which technological advances shaped the course of the country.[51] The primary concern of these works is the study of the role of the government in the introduction, adaptation and promotion of technological innovations. In particular, technologies are explored as tools

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[49] Examples include Julia Rodriguez, *Civilizing Argentina: Science, Medicine, and the Modern State* (Chapel Hill: The University of North Carolina Press, 2006); Nancy Stepan, *The hour of eugenics: race, gender, and nation in Latin America* (Ithaca, N.Y.: Cornell University Press, 1991); Kristin Ruggiero, *Modernity in the flesh: medicine, law, and society in turn-of-the-century Argentina* (Stanford: Stanford University Press, 2004); Sueann Caulfield, *In defense of honor: sexual morality, modernity, and nation in early-twentieth century Brazil* (Durham: Duke University Press, 2000); Donna J. Guy, *Sex & danger in Buenos Aires: prostitution, family, and nation in Argentina*. (Lincoln: University of Nebraska Press, 1991). For historiographical essays on studies of science and technology in the region see Julia Rodriguez, "Beyond Prejudice and Pride: The Human Sciences in nineteenth and twentieth-century Latin *America," Isis* Vol. 104, No. 4 (Dec., 2013) pp. 807-817; and Maria Portuondo, "Constructing a Narrative: The History of Science and Technology in Latin America," *History Compass* 7 (2) (2009), pp. 500-522.

[50] Katharine French-Fuller, "Gendered invisibility, respectable cleanliness: The impact of the washing machine on daily living in post-1950 Santiago, Chile," *Journal of Women's History*, Vol. 18, No. 4, pp. 79-100; Friedrich A. Kittler, *Gramophone, film, typewriter*. (Stanford: Stanford University Press, 1999); Constantin von Barloewen, *Cultural history and modernity in Latin America: technology and culture in the Andes Region* (Providence, R.I.: Berghahn. 1995); Michael Matthews, "De Viaje: Elite Views of Modernity and the Porfirian Railway Boom," *Mexican Studies/Estudios Mexicanos* 26 (2) (2010), pp. 251-289.

[51] Joseph J. Castro, Wireless: radio, revolution, and the Mexican state, 1897-1938. (Ph.D. diss., University of Oklahoma, 2013); Matthews, "Railway Culture"; John B. Freeman, "Transnational Mechanics: Automobility in Mexico, 1895--1950." (Ph.D. diss., City University of New York, 2012); Libertad F. Díaz M.,"Antecedentes, desarrollo y principales consecuencias de la participación del estado en el desarrollo de la industria eléctrica en México, 1889-1960." (Ph.D. diss., Universidad Nacional Autónoma de Mexico, 2012). For recent work on specific state reforms that incorporate a section of their analysis on the role of technology see Amanda Lopez, "The Cadaverous City: The everyday life of the dead in Mexico City, 1875-1930." (Ph.D. diss., The University of Arizona, 2010); Wolfe, "Water and Revolution"; and Jonathan M. Weber, "Hustling the old Mexico aside: Creating a modern Mexico City through medicine, public health and technology in the Porfiriato, 1887-1913. (Ph.D. diss., The Florida State University, 2013).

for nation building. A recent cultural study of the development of the railroad during the Porfirian administration argues for the pivotal role played by the railway as a tool to unite the country not only economically (linking production zones to markets and ports), but also culturally (forging a national identity).[52] Likewise a study on the development of radio technology demonstrates how it became crucial to the government's attempts at incorporating frontiers, foreign policy, the outcome of the Mexican Revolution, and the formation of the single-party state.[53] State-centered studies of technologies have then taken important steps to enrich our understanding of the political and government environment under which these technologies flourished. They have revealed not only the governmental and institutional networks of power that shaped technological adaptations, but also the ways in which they entered discourses of modernity, revolution and nationhood.

My study takes a different approach to the study of technology. It is influenced by a generation of scholars of technology who have gone beyond studying the effects, that is the impact of technological change on society, to the study of the effects of society on technology.[54] The social construction of technology approach (also known as SCOT) in the work by Wiebe Bijker, for instance, argued that technological inventions are created within society, and thereby, they cannot be viewed without this context. He identified the

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[52] Matthews, p. 15.

[53] Castro, p. x.

[54] D. A. Mackenzie & J. Wajcman, eds., *The social shaping of technology: How the refrigerator got its hum*. (Buckingham, England: Open University Press, 1999); Nelly Oudshoorn and Trevor Pinch, "Introduction: How Users and Non-Users Matter", in *How Users Matter: The Co-Construction of Users and Technologies*, ed. N. Oudshoorn and Trevor Pinch (Cambridge, Mass.: The MIT Press, 2003): pp. 1-25; David Edgerton, *The Shock of the Old: Technology and Global History since 1900* (Oxford: University Press, 2007); W. E. Bijker, *Of bicycles, bakelites, and bulbs: Toward a theory of sociotechnical change*. (Cambridge, MA: MIT Press, 1995).

existence of "relevant social groups" who play a role in the development of a technological artifact and who are defined as those groups who share the meaning of the artifact (interpretive flexibility). This meaning can then be used to explain particular developmental paths. As Bijker shows, for young brave men riding the bicycle for sporting purposes the high-wheeler bicycle was a working technology, slightly dangerous, but that was, partly, the point. It was the "macho machine." For women and elderly men, who wanted to use the bike for transport, it was a non-working technology. It was unsafe. The different meanings and the developmental paths the artifact followed can be traced until "closure and stabilization" occur. In others words, until the artifacts seem to iron out the problems and an increasingly dominant form is adopted.

My analysis goes beyond examining the role played by relevant social groups in the development of technological innovations. It is also informed by a user-centered approach, which treats users as agents of technological change. Scholars who followed this approach have rejected outright the image of users of technology as offering only passive acceptance or fierce resistance. User-based scholarship claims that the use of artifacts or systems has not only resulted in unforeseen consequences, but that users in their relationships to these have shaped them in the process.[55] Ronald Kline and Trevor Pinch in their study of the automobile in the rural United States, for instance, showed how farm men made unexpected uses of the automobile (as snowmobiles, tractors and agricultural transport vehicles) and the power of its engine (to run corn shellers, grinders,

[55] Ronald Kline and Trevor Pinch, "Users as agents of technological change: The social construction of the automobile in rural United States," *Technology and Society* 37, No. 4 (Oct., 1996), pp. 763-795; Susan Strasser, *Never Done: A history of American housework* (New York: 1982); Ruth Schwartz Cowan, *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave* (New York: Basic Books, Inc., Publishers, 1983).

saws, pumps, washing machines, and cream separators) in ways unimagined by their developers.[56]

Informed by both the social construction of technology and user-based scholarship, my dissertation explores the intricate details of the social meanings of electricity and the social shaping of this technology. I examine the variety of ways in which everyday Mexicans became sellers and consumers of electricity. That is, this study seeks to document how social commentators, inventors, small businessmen, home advisors, housewives, electrical workers, and ordinary citizens became electrifying agents as they first crafted a discourse for an electrified future and second, how they shaped the consumption of the new technology and the technology itself.

Answering the call

Mexico, along with other economically developed countries in Latin America, came to the call of the electric revolution and closely followed the pattern of those countries leading the adoption of the electrical industry. Its application to mining activities, for instance, was introduced only a year after being tested in U.S. mines.[57] By 1889, the Batopilas mine in the state of Chihuahua was crushing ore employing two hydroelectric turbines and two steam generators.[58] In the next decade, steam-generated electricity was put to work in the most important mining centers: in the Santa Ana mine in the Catorce

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[56] Kline and Pinch, 775.

[57] Mexican mines and refineries were the first among Latin American countries to experience the application of electricity. Kendall Brown, *A history of mining in Latin America: From the Colonial era to the present*. (Albuquerque, NM: University of New Mexico Press, 2012), p. 110

[58] Ernesto Galarza, *La Industria Eléctrica en México*. (Mexico: Fondo de Cultura Económica, 1941), p. 9.

district, the largest mine site in San Luis Potosí, for drainage works; in El Boleo mines of Santa Rosalía, in Baja California, for pumping, ventilation, crushing mills, illumination, and grinding; in Real del Monte, in Pachuca, for pumping the deepest shafts and grinding ore.[59] The Guggenheim Corporation plant in Aguascalientes was the first to employ the new energy for smelting metal.[60] One of the leading domestic trade journals celebrated the potential of electrical smelting as one of the greatest moment in the country's mining history given the great possibilities to the production of iron and the treatment of low grade copper sulfide ores, which until then had remained unprofitable.[61]

The application of electricity had reached the oldest and most important production centers within twenty years of the electrification of the Batopilas mine.[62] Indeed, it had become the preferential source of energy in Latin American mines, where it made profitable the large-scale exploitation of low-grade ores and the reduction of labor expenses.[63] Despite its wide use in the various stages of mining activities, its most profound impact was in controlling the presence of underground water. Flooding of shafts had been a major obstacle to the recovery of mining activity in the nineteenth century.[64]

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[59] Ibid, pp. 9-24.

[60] Ibid, pp. 9-10.

[61] "Electrical Smelting," *The Mexican Mining Journal*, Vol. 5, No. 4 (Oct., 1907), p. 8.

[62] Among these Cananea, Santa Rosalía, Ostotopaquillo, San Rafael, Dos Estrellas, Río Verde and Natividad. Galarza, p. 10.

[63] The introduction of electricity was one of the technological innovations that transformed the industry in the late nineteenth century. Brown, pp. 108-116. For a discussion on the transformation of work by the introduction of pneumatic drills and power machinery see French, "*A Peaceful and Working People*."

[64] Henry George Ward detailed the physical state of some of the most important mines after the conclusion of the wars of independence. The flooding of shafts along with decayed timbering had resulted

Electrical energy was either generated by the mining companies themselves or bought from commercial electric companies.[65] In the north, energy could be imported from the United States when no national sources were available to supply it. This was the case of El Tigre mine, in Sonora, which received electricity from the Copper Queen Mining Company in Douglas, Arizona. In many mining districts interdependency arose between electric companies and mines, while in others the mining companies themselves generated their own electricity. Surplus energy was sold to consumers.[66] The latter was particularly common in countries such as Mexico and Bolivia, which had a strong mining sector.[67]

The electrification of manufacturing processes remained isolated and uncoordinated until the turn of the twentieth century. Between 1887 and 1911, more than one hundred electric power companies were created. The table below is a partial list of the most important ones. (Table 1) All major industries were quick to introduce the new energy source to their economic activities with immediate results in increased production and labor costs savings. The drive to electrify manufacturing was recognized in 1904 by the *American Machinist*, which, in a note on the country's industrial development, pointed out that every town and village of any pretensions was demanding the introduction of

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in the cave in of many mines. Many remained unattractive for decades awaiting investors with deep pockets and up-to-date technology to make them profitable. Henry George Ward, *Mexico in 1827*. (London: H. Colburn, 1828).

[65] Galarza, p. 10. During the Mexican Revolution, the transmitting line was repeatedly cut, but promptly repaired. Without it, it was believed operations would have been brought to a halt as all of the horses and mule owned by the freighters employed by the company had been stolen on several occasions. "Conditions in Sonora," *Mining and Scientific Press*, Vol. 111 (July, 1915), pp. 80-81.

[66] On surplus energy see Galarza, pp. 14-15.

[67] Xavier Tafunnel, "La Revolución eléctrica en América Latina," *Revista de Historia Económica*, Vol. 23, Issue 3 (Dec., 2011), p. 7.

electricity and moving to harness the powerful waterfalls that doted the nation's territory.[68] Among the industries jumping-on the electrical bandwagon were the textile, tobacco, paper, and glass factories. These translated into the emergence of private power plants that generated the energy needed to move their machinery inside. Those with surplus energy often marketed it to municipal governments to be used for public lighting purposes.

Table 1:

Date	Company name	Capital
1887	Compañía Anónima de Alumbrado de Puebla	$100,000
1892	Compañía Nacional de Luz Eléctrica	$200,000
1892	Compañía de Luz y Fuerza Motriz Eléctrica	$100,000
1894	Compañía de Tranmisión Eléctrica de Potencia del Estado de Hidalgo	$380,000
1896	Guanajuato Power Company	$3,000,000
1897	Compañía Eléctrica e Irrigadora de Hidalgo	$100,000
1897	Compañía Explotadora de San Ildefonso	*
1898	Compañía Mexicana de Electricidad	*
1898	Compañía de Tranvías, Luz y Fuerza de Puebla	*
1902	Compañía Eléctrica Potosina	$70,000
1902	Compañía Mexicana de Luz y Fuerza	$50,000
1902	Compañía de Ferrocarriles Eléctricos de Tampico	$155,000
1902	Compañía Industrial El Oro	$175,000
1903	Compañía Hidroeléctrica Queretana	$500,000
1904	Compañía Eléctrica de Aguascalientes	$500,000
1904	Michoacán Power Company	$1,000,000
1907	Compañía de Luz y Fuerza Eléctrica de Campeche	$250,000
1907	Compañía de Tranvías, Luz y Fuerza de Guadalajara	$3,000,000
1908	Compañía de Luz y Fuerza del Isto de Tehuantepec	$525,000
1908	Veracruz Electric Light, Power and Traction Company	$2,500,000
1909	Compañía Hidroeléctrica del Río Alameda	$2,000,000
1909	Santiago River Power Company	$100,000
1910	Compañía de Luz y Fuerza de Campeche	$250,000
1910	Compañía Hidroeléctrica e Irrigadora de Chapala	$14,000,000
1910	Compañía de Luz y Fuerza de Pachuca	$4,000,000
1910	Compañía Eléctrica de Zacatecas	$300,000
1910	Compañía Tabasqueña Electro-Motriz	$250,000

Source: Ernesto Galarza, *La Industria Eléctrica en México.* (Mexico, D. F.: Fondo de Cultura Ecónomica, 1941).

* no data reported

The historiography of Mexican electrification has deep roots. Efforts to document its early applications were first led in the late 1880s by the Ministry of Fomento, and resulting publications were showcased in world exhibitions as proof of the country's

[68] "Mexican Industrial Development," *American Machinist* 18 August 1904, p. 1109.

progress in the field of electricity.[69] Economic assessments of the state of the industry emerged in the social reform phase of the revolution.[70] Renewed industrialization efforts led by the federal government in the 1940s-1950s brought forth dedicated studies on the industry's development as well as the challenges it faced.[71] Analyses by government officials and academics in the post-1960s era were primarily concerned in evaluating the impact of the industry's nationalization.[72]

Historical research on the electric industry has greatly expanded in the last two decades. Besides the general economic histories on its development,[73] the research agenda has roughly concentrated in two areas. The first one has centered on the foreign

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[69] Alberto Best, *Noticia sobre las Aplicaciones de la Electricidad en la Republica Mexicana*. (Mexico City: Impresora de la Secretaria de Fomento, 1889); Rafael R. Arizpe, *Estadística de las aplicaciones de la Electricidad en la Republica Mexicana*. (Mexico City: Tip. y Lit. "La Europea," 1900). Arizpe concurrently published a study on the history of public lighting up to 1900, *El Alumbrado Publico: Estudio Histórico*. (Mexico City: Tip. y Lit. "La Europea," 1900).

[70] José Herrera y Lazo, *La industria de la Generación de Fuerza hidroeléctrica, su fomento y reglamentación en México*. (Mexico City: Talleres Gráficos de la Nación, 1920); *La Comisión Nacional de Fuerza Motriz, su organización, labores y* tendencias. (Mexico City: Editorial Cultura, 1924); *La Fuerza Motriz en México*. (Mexico City: Talleres Gráficos de la Nación, 1927); *La industria Eléctrica, lo que al público le interesa saber*. (Mexico City: Editorial Cultura, 1933); American analyst J. R. Bradley, *Fuel and Power in Latin America* (Washington, D.C.: Department of Commerce, United States Government Printing Office, 1931); the first academic analysis is considered Rodolfo Ortega Mata, *Problemas económicos de la industria eléctrica*. (Mexico City: Fondo de Cultura Económica, 1936).

[71] Galarza, *La industria eléctrica en México*; James S. Carson, "The Power Industry," in Lloyd J. Hughlett, Ed., *Industrialization of Latin* America, (New York: McGraw-Hill, 1946), pp. 319-345; Julián Díaz Arias, *La industria eléctrica y su importancia en la industrialización de México*. (Mexico City: Facultad de Derecho y Ciencias Sociales, 1946); Fred J. Rippy, *Latin America and the Industrial Age*. (New York: G.P. Putnam's Sons, 1947); Cristobal Lara Beautell, *La industria de energía* eléctrica. (Mexico City: Fondo de Cultura Económica, 1953); Emilio Alanís Patiño, "La energía en México," *Investigación Económica*. Vol. 14, No. 2 (1954), pp. 163-229.

[72] Miguel S. Wionczek, "The State and the Electric-Power Industry in Mexico, 1896-1965," *Business History Review*, Vol. 39, No. 4, Special Latin American Issue (Winter, 1965), pp. 527-556; Guillermo Martinez Dominguez, "Integración y desarrollo de la industria eléctrica de Mexico. La obra 1965-1970," *El Trimestre Económico*, Vol. 38, No. 150 (2) (April-Jun., 1971), pp. 433-454; Rodolfo Ortega Mata, "La electricidad hasta su nacionalización" *El Economista Mexicano* Vol. II, No. 4 (1962), pp. 426-462.

[73] Enrique de la Garza Toledo, *Historia de la industria eléctrica en México, Vol. I & II* (Mexico City: Universidad Nacional Autónoma de México, 1994). Daniel Reséndiz Núñez, Coord., *El sector eléctrico de México*. (Mexico City: Comisión Federal de Electricidad/Fondo de Cultura Económica, 1994).

companies that dominated the industry from the late Porfiriato to its nationalization. Indeed, this has occurred at a regional level with foreign investment in the electrical industry in Latin America, and in public utilities in general, having received its due share of attention by economic historians.[74] The other area of concentration has been studies that follow the electrification process of a given urban area or economic activity and those that use an individual electric company as their historical lens.[75] The application of electricity for traction and lighting has also begun its own research niche.[76] Recent work on the introduction of electricity to individual factories is sure to add a new dimension to

[74] Carlos Marichal, Coord., *Las inversiones extranjeras en América Latina 1850-1930. Nuevos debates y problemas en historia económica comparada*. (Mexico City: Colegio de M*éxico, Fondo de Cultura Económica*, 1995); Tafunnel, "La Revolución eléctrica," *Revista de Historia Económica*, Vol. 23, Issue 3 (Dec., 2011), pp. 327-359; Leticia Campos Aragón, Coord., *El modelo británico en la industria eléctrica* mexicana. (Mexico City: Siglo XXI editores, 2003); The regional work by J. Fred Rippy stands as precedent for this type of regional studies. See "German Investments in Latin America" *Journal of Business of the University of Chicago,* Vol. 21, No. 2 (Apr., 1948), pp. 63-73; and *British investments in Latin America, 1822-1949*: *a case study in the operations of private enterprise in retarded regions*. (Minneapolis, MN: University of Minnesota Press, 1959).

[75] Reinhard Liehr and Mariano Torres Bautista, "Las Free-Standing Compañias Britanicas en el Mexico del Porfiriato, 1884-1911," *Historia Mexicana*, Vol. 47, No. 3 (Jan.-Mar., 1998), pp. 605-653; Leticia Campos Aragón, *La electricidad en la Ciudad de Mexico y área conurbada*. (Mexico City: Siglo XXI, 2005); Reinhard Liehr, and Mariano Enrique Torres Bautista. *Las compañías eléctricas extranjeras en México, 1880-1960*. (Puebla, Mexico: Benemérita Universidad Autónoma de Puebla, 2010); Gloria Medina Gomez, "Introducción de la luz eléctrica a la ciudad de Oaxaca: Modernización urbana y revolución mexicana," in José Mario Contreras Valdez, María Eugenia Romero Ibarra, and Pablo Serrano Álvarez. *Actividades, espacios e instituciones económicas durante la Revolución mexicana*. (Mexico: División de Estudios de Posgrado, Facultad de Economía, DGAPA-UNAM, 2004); W. J. Hausman and John L. Neufeld, "The rise and fall of The American & Power Company: A lesson from the past," *Electricity Journal*. Vol. 10, No. 1 (Jan./Feb., 1997), pp. 46-53; Gloria del Rocío Montalvo Hernández, "El proceso de electrificación en San Luis Potosí, 1880-1910," (San Luis Potosí, Mexico: MA Thesis, El Colegio de San Luis, 2010); Moisés Gámez, *Electricidad: recurso estratégico y actividades productivas. Procesos de electrificación en el norte de Mexico, siglos XIX*-XX. (San Luis Potosí, Mexico: El Colegio de San Luis, 2013).

[76] Georg Leidenberger, "Los tranvías en la ciudad de Mexico desde la electrificación hasta la revolución, 1900-1911" in Carlos Aguirre Anaya, Marcela Dávalos y María Amparo Ros, Coord., *Los espacios públicos de la ciudad. Siglos XVIII and XIX*. (Mexico City: Casa Juan Pablos/Instituto de Cultura de la Ciudad de Mexico, 2002), pp. 335-354; Hayde Toledo, "Historia social de la tecnología tranviaria en el Distrito Federal, 1898-1920," (Mexico City: MA Thesis, Facultad de Filosofía y Letras, UNAM, 2010); Lilian Briseño, *Candil de la calle, oscuridad de su casa: La iluminación en la Ciudad de Mexico durante el porfiriato*. (Mexico City: Tecnológico de Monterrey, Instituto Mora, 2008).

our understanding of the transformation brought about by the new energy source as well as how it was manipulated by workers.[77]

Scholarship on electricity has long been dominated by economic and business histories as well as technical and policy studies of the industry. A handful of works have ventured towards a more social understanding of the electrification process. The latter includes studies on the educational training of engineering students as well as those who participated in the construction of the Necaxa hydroelectric in the early twentieth century.[78]

This study grew from the fertile soil these studies have sown and seeks to enrich it by adding a cultural dimension to the electrification process of the country's capital. It does so by treating electrification as a social process that varies from one period to another and from one culture to another.[79] Electricity as a primary engine of modern society permeated all aspects of life crisscrossing histories of the city, transportation, labor, business, engineering, women, medicine, death, public celebrations, nightlife, advertising, literature, architecture, to name several. The primary question this study

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[77] The following papers were delivered at the International Symposium, "Globalización, innovación y construcción de técnicas urbanas en América y Europa, 1890-1930, Brazilian Traction, Barcelona Traction y otros conglomerados financieros y técnicos," Universidad de Barcelona, Facultad de Geografía e Historia, 23-26 Jan. 2012. "José Gustavo Becerril Montero, "El proceso de construcción de estaciones productoras de energía eléctrica. El caso de las fábricas Santa Teresa y La Hormiga, 1896-1907;" Eulalia Ribera Carbo, "Moviendo telares e iluminando la ciudad. De la industria local a la globalización empresarial en la electrificación de Orizaba, México, 1890-1919;" Humberto Morales Moreno, "Orígenes de la industria eléctrica en Puebla, México. 'La hidroeléctrica de El Portezuelo, 1899-1910;" Azucena Arango Miranda, "Energía hidráulica, industria y electrificación: El caso de las fabricas de papel de San Rafael y anexas, México."

[78] Elio Agustín Martínez Miranda and María de la Paz Ramos Lara, "Funciones de los ingenieros inspectores al comienzo de las obras del complejo hidroeléctrico de Necaxa," *Historia Mexicana,* Vol. 56, No. 1 (Jul.-Sep., 2006), pp. 231-286; Ernesto Godoy Dárdano, *La enseñanza técnica y de la Electricidad en el Colegio del estado de Puebla durante el Porfiriato*. (Puebla: Gobierno del Estado de Puebla, 1991); Libertad Díaz Molina, "La formación de los ingenieros electricistas en Mexico y en Cuba, 1889-1940," (Mexico City: MA Thesis, Facultad de Filosofía y Letras, UNAM, 2010).

[79] Nye, ix.

seeks to answer is how did Mexicans shape the electrification process in the country's capital. It addresses this by looking at how the government used electricity in the construction of a modern society and subsequently, how did public and domestic life change. It does so by looking at both public and private spaces. It looks at how electric streetcars altered the cityscape, and how behaviors were conditioned by their arrivals as well as the interpretations and appropriations ordinary citizens made of them. It then moves to question how the consumption of this technology was regulated and contested in its context of use. It also looks at its significance to the emerging urban middle class in the after the 1920s through the lens of electrical appliances.

In an effort to examine both how the electrification process was shaped across both time and space, I engage in a diachronic analysis. The period under review goes from the 1880s to the 1960s. I take the 1880s as the starting point because this decade was marked lighting system; and ends with the rising introduction of electrical appliances to middle-class homes in the 1960s. Instead of following a linear narrative of the electrification process, my study undertakes four case studies. The first case study, labeled "Setting the Liberty Bell on Fire," discusses the public use and debate of electricity from the 1880s to the 1910. It examines the use of electricity in public celebrations. Ceremonies and processions allowed the reading of the symbols used to communicate the dramatizations of state power. The Porfirian administration made ample use of patriotic celebrations, parades, inaugurations and even funeral processions for nation building purposes during its long period in power. Electricity as significant element in the exhibition culture of World's Fairs, became a useful tool to showcase the progress the regime had achieved in its efforts to industrialize and modernize the country.

If public electric lighting was electricity's spectacular face, the electric streetcar was its dark side. The second case study takes to the streets and transverses Mexico City aboard electric streetcars in order to piece together the ways in which they altered daily life and the uses Mexicans made of it. Electrified streetcars embodied both the tangible and imagined notions of Porfirian modernity, but the disorder brought about by streetcar accidents endangered the ideal city envisioned by urban designers. Focusing on the debates surrounding accidents, this study argues that accidents and responses to them did not question the modernization efforts or advocate for the return of older modes of transportation. Rather, by going against the proper use of the streets, these accidents joined everyday practices such as public urinating, defecating and drinking which authorities sought to reform as they deemed them unaccepted practices in a modern city.[80] Public behavior in and around streetcars was closely policed. There was a marked effort to regulate pedestrians on the streets. Walking the city was no longer to be done in reckless ways, but rather in rational and institutionalized methods. These accidents, their public discussion and debate, were not a counter narrative of modernity; instead, they were the embodiment of modernity in the making. Their discussion expressed the growing anxieties of a society in a quest for modernity.

The third case study deals with electricity theft during the first two decades of the twentieth century. The case study addresses both the nature of electricity theft and the efforts to deal with it. First, it examines the everyday personal choices of individuals, who engaged in electricity theft and fraud and the public debates over the regulation of

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[80] For a detailed discussion of these everyday practices that threatened the ideal city see Pablo Piccato, "Urbanistas, Ambulantes, and Mendigos: The Dispute for Urban Space in Mexico City, 1890-1930," in Carlos A. Aguirre and Robert Buffington, Eds., *Reconstructing Criminality in Latin America*. (Wilmington, DE: Scholarly Resources, Inc., 2000), pp. 113-148.

proper use of electricity. Financial incentives drove active and former electrical workers, as well as ordinary individuals, to set up illegal connections of electricity or tamper with meters. The market for theft devices ranged from rudimentary implements to the sophisticated Palmer transformer that made power meters run backwards. The beneficiaries of illegal connections and theft devices included anyone from owners of prestigious theaters, small business owners, a town council member, the elderly, widows, and slum residents. The examination follows the stories of small business owners, who made up the bulk of the individuals whom the Mexican Light and Power took to court. It also follows the electrical workers and supervisors who detected electricity theft and represented the company's interest in court. Here the interest centers on the ways in which individuals framed their cases, the way they defined their relationship with electricity, the logic of their arguments, and the way they challenged ideas of property and theft. Arguments on both sides illustrate the complex process of negotiation and discord that played out in the everyday life process of the city's electrification. In addition, this case study examines the ways in which electricity's invisibility proved to be a problem when it came to holding people accountable for its theft. It became necessary to make it visible in order to legislate it. The analysis follows the legal debate lawyers employed in their efforts to defend their clients from prosecution as well as those who sought to legislate the new energy source. Legal responses to electricity theft illustrate the complexity of regulating modernity in everyday life.

The fourth case study uses electrical appliances to enter the domestic space of middle-class families to examine the ways in which these technological devices were appropriated to refashion values of gender, class and culinary nationalism. My analysis

goes from the 1930s to the 1960s, the period of the consolidation of the revolutionary regime and the economic Miracle. It follows the work of Josefina Velázquez de León, a family cook with no formal training, who published over 150 cookbooks for middle-class housewives; ran her own cooking school; and wrote cooking columns for women's magazines. General Electric and the *Comisión Federal de Electricidad* (the state-owned electric utility company) sponsored both her cooking school and many of her publications. Among the practical suggestions dispensed in her many publications, Josefina gave special attention to the incorporation of modern electrical appliances and canned foods into the preparation of national dishes. By the 1950s, Josefina's cookery advice was so popular that she had her own cooking shows on radio and, later on, on television. Josefina's culinary patriotism did not prevent her from incorporating packaged and canned foods, and modern kitchen appliances. Instead, she played an important role mediating their incorporation in the elaboration of national dishes. It was through her cooking advice and demonstrations that she directly influenced how electrical appliances were domesticated. She did so by translating domestic technology into cultural terms understandable to the local population. That is, she contributed to the domestication of electrical appliances into desirable items with desired consumer values that catered to contemporary social anxieties. To a certain extent, then, she facilitated the desirability of electrical appliances as markers of social class and modern identities.

CHAPTER I
Setting Fire to the Liberty Bell:
Electric lighting in the public life of turn-of-the century Mexico City.

Those pale candles, like farthing rushlights,
that disturb the dark
no more than so many glow-worms –
they are the Lights o' Mexico for the present.[81]

The crowd attending the Independence Day celebration of 1896 witnessed the addition of a new commemorative element to the patriotic ritual. The liberty bell, which had been rung by Father Miguel Hidalgo y Costilla to summon his parishioners to church where he delivered his now-legendary call to rebel against the Spanish crown, had been secured by the *junta patriótica* (the patriotic committee) and brought to the National Palace and hung in the presidential balcony. President Porfirio Díaz, who received the symbolic delivery of the bell from General Sóstenes Rocha, declared that it was like a phonograph to preserve the voice of Father Hidalgo.[82] As the star of the most important civic ritual, the bronze bell was draped in incandescent lights in patriotic colors to stand

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[81] Mary Elizabeth Blake and Margaret Frances Sullivan, *Mexico: picturesque, political, progressive*. (Boston, Mass.: Lee and Shepard Publishers, 1888), p. 80. This is a classical fable. "A rushlight that had grown fat and saucy with too much grease, boasted one evening before a large company that it shone brighter than the sun, the moon, and all the stars. At that moment, a puff of wind came and blew it out. Someone who lit again said 'Shine on, friend Rushlight, and hold your tongue: the lights of heaven are never blown out.'" Frederic Taber Cooper, Ed., *An argosy of fables: a representative selection from the fable literature of every age and land*. (New York: Frederick A. Stokes Company Publishers, 1921), p. 26.

[82] Carmen Nava and Isabel Fernández, "La campana de Dolores en el imaginario patriótico," *Boletín del Archivo General de la Nación*, 6a época, No. 2 (Nov.-Dec.), 2003, pp. 123-142; and Carmen Nava and Isabel Fernández, "Images of Independence in the Nineteenth Century: The *Grito de Dolores*, History and Myth," in *¡Viva Mexico! ¡Viva la Independencia! Celebrations of September 16,* William H. Beezley and David E. Lorey, Eds. (Wilmington, DE: SR Books, 2001), pp. 1-41.

out in the darkness of night. At 11:35pm, president Díaz stepped onto the presidential balcony and grabbed the rope attached to the bell. The multitude congregated in the Zócalo below had grown to the point that a number of individuals were claimed to have perished that night.[83] The festive scene was complemented with cascades of colored fires pouring down from the Cathedral towers and the Palace walls.[84] As the lights around the bell were turned on, resembling a star of electric fire,[85] a collective gasp escaped from the human mass compacted in the Plaza making the two rings of the bell imperceptible.[86] The sublime element of the incandescent lights had captured the assembled audience. The much-awaited sound of the night was too weak to break the spell. A drawn-out silence reigned until the bells of the Cathedral broke out and the *¡Vivas!* finally reverberated with effervescent cheers for the independence and its heroes. Nevertheless, the chronicler of the event believed part of the ritual's splendor had been lost, as the frenzied happiness of yesteryear had not burst in the traditional fashion.[87] Spectacular lighting had ironically overshadowed the much-awaited debut of the liberty bell.

The use of electric lighting became both a symbolic and physical essential element in Porfirian public celebrations. As a tangible and emblematic symbol of the country's progress, electricity became a preferred medium to paint the cityscape modern. Its lavish use followed in lockstep the civic ritual calendar. It served as both the medium

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[83] *El Siglo Diez y Nueve* reported that three individuals died in the Plaza that night. "La noche del dia 15. El Grito. La Campana: Desgracias personales," *El Siglo Diez y Nueve*, 17 September 1896.

[84] Reau Campbell, *Campbell's new revised complete guide and descriptive book of Mexico*. (Mexico City: Sonora News Company, 1899), p. 89; "Las fiestas de la patria. Felicitaciones al Sr. Presidente," *La Patria*, 16 September 1896.

[85] Campbell, *Campbell's new revised complete guide*, p. 89.

[86] Nava and Fernández, "La campana de Dolores," p. 141.

[87] Ibid.

and the message. By meeting the practical purpose of lighting the city at night, it contributed to the emergence of a more active nightlife. On the one hand, the material improvement of electrical public lighting transformed the city center; while on the other it stood as proof that technological advances attained abroad could now be enjoyed at home. This provided the city with an aura of modernity which was easily achievable as well as affordable compared to other infrastructural technology, and one that was internationally recognized as a sign of material progress and which reiterated the regime's commitment to scientific improvements.

Public ceremonies and processions have afforded contemporary scholars with a window into the social hierarchies of past societies. They have been particularly crucial to our understanding of Porfirian Mexico given the regime's reliance on public rituals in the construction of the state. Thus they have allowed us to appreciate the depth and breath of the administration's use of public dramas as a mechanism to imprint their own narrative of the nation's past, and to reiterate the roadmap they envisioned for its future. Porfirians thoroughly exploited public ceremonies as unrivaled stages to showcase a society's achievements and opportunities for officeholders allegorically to join the pantheon of national heroes while garnering support for the regime. The regime's reliance on memorialism made ample use of a broad spectrum of public events from commemorations of national holidays, inaugurations of infrastructure projects, to state funerals among others. For instance, inaugurations of railways lines, organized with great fanfare, came to represent a modern liturgical mechanism through which to eulogize the virtues of material progress as well as the social order attained by the Porfirian

administration.[88] Government officials to fortify support for their national project likewise harnessed public enthusiasm generated in these "festivals of progress".[89] Successful manipulation of these public dramas had a lasting significance shaping not only the immediate perception of Diaz's leadership, but ultimately his legacy.[90]

As a visible correlative for the ideology of progress and modernity, Porfirians manipulated electrical lighting in their attempt to order urban space. Its malleability offered officials unprecedented control over the darkness of night. After dark artificial lightning allowed singling out the beautiful and enhancing it, while hiding the bleak and the dreary.[91] It permitted for the landscape to be edited, simplified and dramatized. The new rhetoric of night space edited the city down to a few idealized essentials. Urban space served as a mere canvas unto which visual narratives could be drawn. From the first installation of electric public lighting in Mexico City (1880s) to its magnificent display in the country's centennial celebration, electricity altered the ways in which the city was experienced. It reordered the nightscape, covering the City of Palaces with a mantle of modernity.

Electric lighting was by no means confined to the whims of government officials. Business owners and residents alike sought to introduce this technology into their houses. Factories, commercial houses, theaters and hotels, among others, transitioned to the latest artificial lighting based on both practical and symbolic matters. For instance, open flame gas lighting in a textile factory was a constant source of danger. Advertisements of

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[88] Matthews, *The Civilizing Machine*.

[89] Ibid, 110.

[90] Matthew Esposito, *Funerals, Festivals, and Cultural Politics in Porfirian Mexico*. (Albuquerque, NM: University of New Mexico Press, 2010).

[91] Nye, p. 60.

electric lighting, along with electric water pumps and electric elevators, were among the first items found in the city's dailies. Electric lighting was promoted as a complementary element of luxury. Unattainable by most of the population, electrical lighting was a mark of status. Its consumption conferred the owner with a modern identity.[92]

As this chapter documents, the Porfirian regime from early on identified the potential of electrical lighting as a tool for nation building and as tangible embodiment of material progress. Its promotion and adoption reinforced the regime's commitment to technological modernization.[93] Focusing on public spaces and concerted attempts to light the dramas that played out in them, the following discussion elucidates the ways in which ordinary citizens encountered the new technology in their everyday lives. Public ceremonies created by avid authorities, in particular, provide a source through which to deconstruct how public officials understood electricity, how it altered the cityscape and, ultimately, how ordinary citizens consequently shaped the process of electrifying the streets.

The Children of Electricity

Harriott Wight Sherratt, from her railway seat, passed a long avenue of colossal trees in the Hacienda of Chapingo, and as she looked out the window her eyes captured the glimmering lights of the country's capital. As the car's march continued, the glimmer

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[92] On the correlation between consumption, identity and the idea of becoming modern see Steven B. Bunker, *Creating Mexican Consumer Culture in the Age of Porfirio Diaz*. (Albuquerque, NM: University of New Mexico Press, 2012).

[93] Recent scholarship has documented the regime's painstaking commitment to cultivate a wide array of technologies in its nation building efforts. See Weber, "Hustling the Old Mexico aside;" Castro, "Wireless: Radio;" Miguel Angel Aviles-Galan, "*A todo vapor*: Mechanisation in Porfirian Mexico. Steam power and machine building, 1862-1906," (Ph.D., The University of British Columbia, 2010); Díaz Molina, "Antecedentes, desarrollo y principales;" and Matthews, *The Civilizing Machine*.

intensified until it became a blaze as the train pulled into San Lázaro station.[94] The source of the mesmerizing illumination had been electric lamps. As she settled into the comfortable cushions of the carriage, she felt once again a part of 19th century civilization. Behind they had left Cortes, the Aztecs, Quetzalcoatl and the other gods and heroes of yesteryear. Her party went on to enjoy the comfort of a well-cooked dinner in one of the city's modern French restaurants. As they wiped their mouths, a gasp of relief broke away as they felt in every fiber of their bodies that they were "the children of steam and electricity" who enjoyed modern newspapers and cooking.

William English Carson believed strange contrasts characterized the country at large. Technological advances (railways, telegraphs, telephones, automobiles, electric light and traction), he argued, had arrived and the social milieu of the elite had been modernized.[95] But the Indian with his burro, the *cargador* with his burden, and the antiquated priest were still around. The old and new, he concluded, where to be seen everywhere side by side. As a land of contrasts, he judged the transitions from the barbarically wild to the socially civilized to be extraordinarily sudden. For a distance before reaching the capital the train had traversed "sandy wastes," maguey fields and sprawling Indian villages, but suddenly, electric lights began to twinkle along the highways, and then an electric streetcar full to capacity flew by on its way to the city.

Foreign travelers to Porfirian Mexico City such as Harriott and William marveled at the contradictory levels of social development they encountered in and around the country's capital. As "the children of electricity," their pens were attentive to signs of

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[94] Harriott Wight Sherratt, *Mexican Vistas seen from highways and by-ways of travel*. (Chicago: Rand, McNally & Co., Publishers, 1899), pp. 212-214.

[95] William English Carson, *Mexico, the wonderland of the south*. (New York: The MacMillan Company, 1909), p. vi.

material progress. Railways, streetcars, electric lights, elevators, among other technologies were oftentimes met with surprise and described as elements out of context. Technologies that were second nature to them back in their countries, but here in Old Mexico they seem out of place.

Electric lighting in the Aztec capital was met with a critical eye by travelers. In order to vindicate the presence of this technology within their predisposed views of the city, descriptive narratives of the streets began to follow a pattern. The mere presence of electric lamps did not render the city modern given the backwardness of habits and the material primitiveness that surrounded them. Backwardness and unhygienic habits marked the lower classes that roamed the city. The *Mexican Financier* captured the contradiction when it described the capital as a man wearing a top hat, sandals and a sarape. The top hat, it claimed, was representative of electric lights, paved streets, and railways, stood in stark contrast to the sandals and the sarape.[96]

Dichotomous portrayals of the city were indeed common in traveler's accounts. Nevin Otto Winter claimed that in no other city did ancient and modern customs came to such intimate contrast.[97] Men and women, he observed, came into the city through streets lighted by electricity, but carried immense loads on their heads and backs instead of utilizing a wagon. Nevin, as many of his fellow travellers who took the task of writing their impressions for posterity, identified progress and civilization with the United States while he believed Mexicans appreciated the mechanical devices and electrical inventions, but preferred to enjoy life as they knew it and in accordance to what they believed God

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[96] *Mexican Financier*, 11 February 1898.

[97] Nevin Otto Winter, *Mexico and her people of to-day: an account of the customs, characteristics, amusements, history and advancement of the Mexicans, and the development of resources of their country*. (Boston, MA: The Colonial Press, 1907), pp. 58-59.

intended to keep them happy.[98]

Fanny Chambers Gooch Iglehart, whose account promised to provide a fairer appreciation of the city than those of fellow travelers who briefly remained in the city, described what she believed was an utmost scene of contrasts. One night, as bright rays from modern gas and electric lights flashed across the wide streets, she observed a large number of individuals whose sleeping-place bordered the Zócalo.[99] They only had the sky as their roof, the stone pavement as beds and their rebozo or sarape as cover. Her seven-year-stay did not prevent her from rendering a description of the native men as opaque as Nevin's. She believed the native to be picturesque. Whether in his mountain home tending to his animals, dressed to partake in his patron saint's day, or in rags under the city's electric lights, ancient traditions hung over him making him pathetic.[100] In this regard, electric lighting stood apart from those below, without granting them a veil of modernity by association.

The blatant contrasts encountered by travelers perplexed them. Familiar objects (telephone, steam-roller, etc.) in an "untranslatable country" seemed to put on an unusual expression.[101] Even electric lights, claimed two co-authors, acquired an eerie look. Although they had always looked unnatural to them, they were "a thousand times more unnatural glittering above a people and a country as primitive as if the world were a

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[98] For a thorough analysis of the paradigm of characteristics worked out by foreign travellers see Beezley, *Judas at the Jockey*.

[99] Fanny Chambers Gooch Iglehart, *Face to face with the Mexicans: The domestic life, educational, social, and business ways, statesmanship and literature, legendary and general history of the Mexican people, as seen and studied by an American woman during seven years of intercourse with them*. (New York: Fords, Howard & Hulbert, 1887), pp. 188-189.

[100] Ibid, 396.

[101] Mary Elizabeth Blake and Margaret Frances Sullivan, *Mexico: picturesque, political, progressive*. (Boston, Mass.: Lee and Shepard Publishers, 1888), p. 79.

thousand years younger." Unnatural was also the feeling that overwhelmed Grace Owen Brown when she found herself writing by electric light in the middle of the countryside. The light seemed out of place in the adobe cabin she occupied. Rather, she thought, an oil lamp of Bible times would have been more appropriate for her surroundings.[102]

Lighting up the city

Foreign travelers to the capital unanimously recognized the transformation the city had experienced during the Porfiriato. Nevin judged that the city was rapidly becoming cosmopolitan. Any recent traveler, he argued, would be overwhelmed by the rate of the changes brought about by material improvements. Among them, he noted, the excellent electric lights and the superb electric streetcars with modern cars running over the asphalted streets connecting the sixteenth century (city center) with the twentieth century (new colonias).[103] Although the introduction of electric traction to the city had indeed been recent (1900), electric lighting had begun works since the early 1880s.

The city's affair with electricity started early. The first news of electricity in the city dated back to 1850 with the first known public trial of electric lighting conducted by Pedro Terreros. He had secured the equipment abroad, carried out the first trial in the Zócalo, before a number of witnesses.[104] Commenting on it, *El Siglo Diez y Nueve* hoped "the strange works" would have useful results for Terreros and the public.[105] Positive

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[102] Grace Owen Brown, *The tour of the 400 to Mexico*. (Chicago: Hartzell, Lord Co., 1907), p. 140.

[103] Winter, *Mexico and her people of to-day*, pp. 70-71.

[104] Few sources have emerged on the equipment used for these trials. Bruno de Vecchi and Carmen de de Vecchi believed the lamp utilized for these trials must have been a voltaic arch lamp. See "Primeros ensayos públicos de la luz eléctrica en la Republica Mexicana," *Quipu*, Vol. 4, No. 1 (Jan.-Apr. 1987), pp. 71-80.

[105] *El Siglo Diez y Nueve*, 5 November 1850.

results were again applauded when a few days later a second trial took place at the Palace of Mines where a commencement ceremony was held with prestigious guests, including President José Joaquín de Herrera. *El Monitor Republicano* compared the light emitted by the electric bulbs to that of the sun,[106] while *El Siglo Diez y Nueve* estimated that if interesting innovations such as the telegraph and electric lighting were introduced more often, in a short time it would make the country a grand and modern place.[107]

The consolidation of Porfirio Diaz's regime in the 1880s and its commitment to Liberal and Positivist values that championed science and technology worked to encourage the interest in electricity for the country's future. This interest materialized in1886 with the Electricity Exposition held at the center of Positivism, the National Preparatory School. This was the first scientific exposition held to introduce the public to electricity. This exhibition demonstrated to the United States and European countries that Mexico, thanks to the social order brought about by the Díaz administration, had entered the path of western progress based on public instruction.

The National Preparatory School had planned the Exposition to commemorate the end of the academic year. The organizers wanted to popularize the scientific developments in the field of electricity that they believed were useful for both students and the general public.[108] The Ministries of War and Development, the directors of national schools, as well as the managers of electric, telephone and telegraph companies were invited to help by displaying their electrical devices or by allowing the school to do

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[106] *El Monitor Republicano*, 20 November 1850.

[107] *El Siglo Diez y Nueve*, 19 November 1850.

[108] "Bases adoptadas para la Exposición de Electricidad que se verificara en la Escuela N. Preparatoria el 15 de Diciembre de 1886," Archivo Histórico de la Facultad de Medicina, File 151, No. 90, 1886.

so. Schools were also encouraged to have their faculty give public lectures on subjects related to electricity.

The Exposition was inaugurated with much fanfare with the crème de la crème in attendance. President Diaz, accompanied by Ministers Ignacio Mariscal (Foreign Affairs), Manuel Romero Rubio (Development), Manuel Dublán (Finance), Joaquin Baranda (Justice), and a good number of generals, were welcomed by the 21st Battalion military band. Justo Sierra, Minister of Education, officially inaugurated the exposition with a passionate speech. Through the Exposition, he declared, electricity had acquired Mexican nationality.[109] As perhaps the most important subject studied in American and European institutions, students needed to study electricity with profound passion to learn its secrets to reveal them transformed in mechanical power.

Minister Sierra upon concluding the inaugural address flipped an electric switch and the public stood in awe as the building's sixteenth-century door opened for President Díaz and the rest of the audience to enter the exhibition. Attendees entered the building via a small room lavishly lighted. An elegant aquarium illuminated from inside with Edison lights welcomed them. The library had been elegantly decorated and profusely lighted. The names of famous electricians (Franklin, Volta, Ampere, Becquer, De la Rive, Pouillet, among others) written in golden letters were found high above on one of the walls. On the back wall, a painting illustrated a stormy cloud with two electrical discharges. Electrical devices grouped by category were displayed in dedicated salons: magnetism, static electricity, telegraph and other uses. These devices, some by Mexican inventors, were operated by the Preparatoria's students who provided spectators with

[109] *El Partido Liberal*, 24 December 1886.

detailed descriptions. Printers in the telegraph department attracted the most attention as spectators gathered to see them in operation. Many individuals took home a piece of printed-paper as a souvenir.

El Economista Mexicano considered the Exposition as a scientific event of great proportions for the country, one that not only demonstrated the level of enlightenment the country had reached under the "empire of peace," but one that had to be replicated.[110]

Porfirians used applications of the new technology as evidence of material progress. These officials, as wizards of progress, made particular use of World's Fairs, one of the prime stages that countries utilized to showcase their commitment to scientific and technological innovations and to construct a modern image of the country for the world to see. The presentation of statistics as the preferred language of late 19th century scientific discourse became a reflection of the regime's actions.[111] By the 1889 Paris Universal Exhibition, statistics from the field of electricity were noteworthy.

General Carlos Pacheco, Minister of Development, a fervent supporter of the use of statistics and influential in the establishment of the *Dirección General de Estadística*, commissioned Alberto Best to participate in the Mexican Commission to the Paris fair.[112] Engineer Best, as a student of the School of Engineers had lectured on the telephone and the use of electricity in ore processing during the 1886 Electricity Exposition, was asked to report of the applications of electricity in the country. The report was for the World

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[110] "De curiosidades, pensamientos y conocimientos utiles," *El Economista Mexicano*, Vol. II, No. 21, 24 December 1886.

[111] Mauricio Tenorio-Trillo, *Mexico at the World's Fairs: Crafting a modern nation*. (Berkeley: University of California Press, 1996), pp. 127-128.

[112] The first residential installation in the country of electrical incandescent lighting was made in General Pacheco's residence only two years after Edison had made his invention. *Noticia sobre las Aplicaciones de la Electricidad en la Republica Mexicana*. (Mexico: Impresora de la Secretaria de Fomento, 1889), p. 8.

Fair's Group, VI section 62, which assembled everything related to the production, transmission, channeling, measurement, and multiple applications to lighting, traction and telegraphy of electricity.

The introduction to *Noticia sobre las Aplicaciones de la Electricidad en la Republica Mexicana*, framed in positivist rhetoric, made evident the true purpose behind the project. Best recognized that the country had not reached par with other countries in the scientific field of electricity. Gains made in industry, agriculture and fine arts, he added, had indeed been mostly achieved in the last few years of political stability that once achieved had allowed the country to concentrate on its regeneration and progress.[113] Taking this into account, Best explained, it is not surprising the country had little or nothing to add to the Group in terms of theory, inventions and applications.

Nevertheless, he argued, the country had much to offer. It not only produced raw materials (copper, textile fibers, natural latex, etc.) essential to the industry, but it offered virgin terrain in the areas of lighting, traction, power and electrometallurgy.[114] One of the objectives of the report, Best made clear, was for European industrialists to become aware that it was a consumer country open to the. Mexicans had an interest in ending the monopoly U.S. electrical material enjoyed.

The compilation of the industry's statistical data for the 1900 Paris Exhibition fell to Engineer Rafael R. Arizpe. The engineer, who had been a classmate of Best twelve years earlier at the Parisian Superior School of Telegraphy, shared the goal of his predecessor.[115] The patriotic goal of his report, he explained, was to widen the offer of

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[113] Ibid., p. 6.

[114] Ibid., p. 8.

electrical material by awakening the interest of manufacturers.[116] Unlike Best, Arizpe included historical information. As the public lighting inspector for the country's capital, Arizpe put together a second book to be presented at the same fair. This book was a historical study of the city's public lighting system from the early years of the colonial period to 1900.[117]

White Coal

Minister Sierra believed the country had everything to gain from the transformation of nature through science. He acknowledged that as a land with little in the way fossil fuel resources for industrial potential had to be created, and electricity was the answer. In the latter half of the 19th century, mine owners recognized that the industry's energy future and their profits rested on a black and dirty mineral: coal. The quest for the black gold intensified in 1881 when Santiago Ramírez, one of the few mining engineers in the country and one of the main advisors to Presidents Manuel González (1880-1884) and Porfirio Díaz on mining matters, led the first explorations for the coveted mineral.[118] Ramírez coordinated scientific expeditions to the states of Michoacán, Guerrero, Oaxaca, Hidalgo and Coahuila in search of the black and smelly

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[115] Elio Agustín Martínez and María de la Paz Ramos, "Funciones de los ingenieros inspectores al comienzo de las obras del complejo hidroeléctrico de Necaxa," *Historia Mexicana*, 56, No. 1 (Jul.-Sep., 206), p. 270.

[116] Rafael R. Arizpe, *Estadística de las aplicaciones de la Electricidad en la Republica Mexicana*. (Mexico: Tip. y Lit. "La Europea," 1900), p. 9.

[117] Rafael R. Arizpe, *El Alumbrado Publico: Estudio Histórico*. (Mexico: Tip. y Lit. "La Europea," 1900).

[118] Santiago Ramírez, *El Carbón Mineral* (Mexico: Imprenta de Francisco Díaz de León, 1882); Santiago Ramírez, *Informe que el ingeniero de minas Santiago Ramírez rinde a la Secretaria de Fomento, como resultado de su exploración a los distritos de Matamoros Izucar, Chiautla y Acatlán en el estado de Puebla y del estudio criadero de carbón mineral*. (Mexico: Filomeno Mata, Impresor, 1881).

mineral, which he believed was indispensable for the existence, development and prosperity of the country's industries.[119] Although the report of the commission headed by Ramírez propelled the exploitation of coal deposits, the high transportation cost, the limited number of deposits and the irregularity of the formation of those that had been opened discouraged mine owners almost brought to a complete halt the mining of the mineral.[120]

Ramírez's exploration campaign for coal-beds resulted from his belief in the coal as fuel and his concern for the forests. The Ministry of Development believed that railroad construction was to make accessible some of the few coal deposits that had been located in isolated areas and consequently, the accelerated destruction of forests would come to an end. The ministry judged, the deforestation would bring changes to the climatological conditions of many regions.[121] Indeed, calls for the expansion of railways were framed as responding to the tremendous rate at which forests were being rampaged.[122] Coal in his view provided a substitute for plant-based fuel, alleviating at once their "savage" deforestation. The engineer later became a staunch promoter of one of the first laws to restrict the "immoderate" cutting down of trees.[123]

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[119] Enrique Canudas, *Las Venas de Plata en la Histórica de México: síntesis de historia económica, siglo XIX*. (Villahermosa, Tabs.: Universidad Juárez Autónoma de Tabasco, 2005), pp. 446-451.

[120] *Monthly Bulletin of the International Bureau of the American Republics*, Vol. XXI, No. 4 (Oct., 1905), pp. 1571-1573.

[121] *Diario de los Debates: Sexto Congreso Constitucional de la Unión*. Vol. II (México: Imprenta de la F. Díaz de León y Santiago White, 1872), p. 338.

[122] Ibid, 257-258

[123] Canudas, 449.

A country, whose mineral wealth was well recognized since the colonial period, had few coal deposits. By the 1880s, most of the coal used had to be imported. Generating steam cost a good deal more than that produced in Europe or the United States.[124] Experts had reached the conclusion that the scarcity of fuel represented the major obstacle to the country's industrialization.

Minister Sierra buoyantly accepted the possibility electricity for the country's development. Electricity, he claimed, had the potential to reawaken the sources of wealth (primarily minerals) and place them in global circulation to push the nation to a greater destiny. The limited coal supply at home coupled with the maturation of hydroelectric engineering abroad made the development and commercial use of waterpower a promising alternative for the needs for the country's energy future.

Applauding the work underway in Mexico, a writer for *Engineering Mechanics* claimed that the greatest value to the country's prosperity came its water resources.[125] The journal held that inexpensive and abundant power would be the greatest wealth-producing factor of the future, and the country with the cheapest power stood to win the industrial race of the twentieth century. In the electrical age, he argued, electricity generated by cheap waterpower could provide the universal solution for all engineering and mechanical problems of the future.

Citizens and foreigners alike shared the minister's assessment of the potential of electricity. The *Boletín de la Asociación Financiera Internacional* believed that given the water sources available, the country had finally discovered "white coal," and thereby,

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[124] Ibid.

[125] *Engineering Mechanics, Devoted to electrical, civil, mechanical and mining engineering*, Vol. XVII, No. 1 (Jan. 1898), p. 211.

could confidently look forward to a great industrial future.[126] Given the superiority of white over black coal, it argued, the country could flourish as the home of manufacturing activity other countries with limited coal-supply had become like extinct volcanoes.

Colonel Ángel García Peña, director of the Geographic Exploring Commission, rendered a similar assessment when it claimed that black coal was the industrial fuel of the past and present, while white coal was that of the future.[127] Coal would eventually be exhausted and part of the same fuel had to be wasted to reach hundreds of meters to mine it under the ground. The second was inexhaustible provided by the waters of the perpetual snow of the majestic Citlaltepetl, Popocatepetl, Iztacihuatl, and Xinantecatl volcanoes.

Necaxa "ruido en el agua"

Hydroelectric projects began in the 1890s. In 1894, the federal government took the ownership, control, and use of water from the purview of *municipios* and states. Col. García Peña noted that Mexico's predominantly liberal laws allowed any citizen or foreigner who met the requirements of the law to become owner of hydroelectric energy.[128]

Less than a year after the new law, two requests had been filed for the use of the Necaxa falls in Puebla state. Arnoldo Vaquié, a French citizen, received the concession.

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[126] "Carbon Blanco' de Mexico," *Boletín de la Asociación Financiera Internacional*, Vol. I, No. 5 (Dec., 1905), pp. 1-3.

[127] Ángel García Peña, *Breve estudio sobre la cantidad de fuerza motora transportable que pueden generar los principales ríos de la vertiente oriental, presentado por el Delegado de Mexico al 8º Congreso Geográfico Internacional, Coronel de Estado Mayor Ángel García Peña, Director de la Comisión Geográfico-Exploradora,"* (Xalapa, Ver.: Tipografía del Gobierno del Estado, 1904). p. 1.

[128] Ibid, 3.

The project, according to local engineers, was not ambitious[129] as he planned to install a factory nearby the falls and supply electric energy to towns in the areas of Huachinango and Tulancingo. Although he also promised to supply Mexico City, Pachuca and other nearby population centers, it seemed unrealistic given his financial resources and the cost of long-distance transmission. By 1902, Vaquié lost his concession to The Mexican Light and Power, Limited, because he had failed to uphold the terms of his contract that included a timetable based on horsepower.[130] The Canadian company, which had been organized among friends of the recognized United States hydroelectric engineer Frederick Stark Pearson, set out immediately to work.

The majesty of the Necaxa falls had acquired national importance by the end of the nineteenth century. Although the falls had remained absent from the national scene for much of the century, they ironically gathered attention when they seemed about to disappear. The appendix to the *Diccionario Universal de Historia y de Geografía* made reference to the falls in its 1856 edition. The *Cascada de Guachinango*, it claimed, was among the most grand and magnificent attractions through which nature had wanted to enrich the country.[131] It lamented that many read the pompous descriptions of the falls of Niagara, Montmorenci, and Tequendama, but only a handful of individuals in the country knew of its existence. Niagara Falls, the dictionary claimed, did not compare to the Guachinango. The former was famous for the water that plunged along its extension of

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[129] Elio Agustín Martínez and María de la Paz Ramos, "Funciones de los ingenieros inspectores…," p. 242.

[130] In early 1902, a group of engineers, among them Porfirio Diaz' son, made a trip to Necaxa to check the progress of the project, that appeared abandoned by the French company organized by Vaquié. "Próxima excursión a Necaxa," *El País*, 8 February 1902.

[131] Manuel Orozco y Berra, Coor., *Apéndice al Diccionario Universal de Historia y Geografía*, Vol. II (Mexico: Imprenta de J. M. Andrade y F. Escalante, 1856), pp. 477-8.

1300 feet, but the falls only dropped fifty *varas* (139 ft.) in distance.[132] This height was three times less than Guachinango and could not either match its luxurious terrain.

Fig. 1. View of the Necaxa Powerhouse from French trail.
Source: F. S. Pearson and F. O. Blackwell, "The Necaxa plant of the Mexican Light and Power Company," *Transactions of the American Society of Civil Engineers*, Vol. LVIII (June, 1907).

Men of letters who ventured to the falls before their exploitation marveled at the natural beauty they encountered. Secundino E. Sosa, medical doctor and professor at the

[132] The height of the falls varies from one traveller to the other. Engineer Teodoro L. Laguerenne in his descriptions claimed the Necaxa dropped from 700 meters, while those of the Niagara plunged from merely 50 meters. Teodoro L. Laguerenne, "Ligera descripción de la instalación hidroeléctrica de Necaxa," *Memorias de la Sociedad Científica "Antonio Álzate*." Vol. 23 (1905-1906) (Mexico: Impresora del Gobierno Federal, 1905), pp. 383-388.

National School of Medicine, led an excursion to the Huachinango district in Puebla state, to collect plants for the National Medical Institute dedicated to the study of the country's flora for therapeutic application. The Huachinango Mountain range provided the source of the Necaxa and Tenango rivers, which ran through almost parallel valleys, before coming together as the splendid falls. The hand of the Creator, Sosa claimed, had produced magnificent landscapes that were both the source of admiration and fright for travelers who contemplate them at the edge of the abyss of the Necaxa falls plunged.[133] Engineer Antonio Garcia Cubas recalled the surprising spectacle he witnessed during his visit. Travellers to that picturesque area did not know where to look first given the superb landscape, he added, as nature's harmony completely reigned there.[134] The falls captured the mind of Jose Maria Velasco, the landscape artist, who after visiting painted *Cascada de Necaxa*. The famous German Zettler House made a visual rendition in stained glass and installed it in the Geology Museum in Mexico City.

Using the falls for the generation of electricity caused mixed feelings. Engineer Teodoro L. Laguerenne believed that Necaxa was among the great projects around the world to make use of the "great power nature had in store." Although the falls were the most prominent in the world, he judged, they would lose their majesty and beauty.[135] In his chapter "Some Mexican Resorts, Spas, Paradises," Joseph King Goodrich claimed that not even the spirit of utilitarianism that had brought about the obliteration of the

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[133] *El Estudio: Semanario de Ciencias Medicas*, Vol. I, No. 1 (June, 1889), pp. 13-14.

[134] Letter of Antonio Garcia Cubas to Ignacio Manuel Altamirano "Impresiones de un viaje a la Sierra de Huauchinango," 18 November 1871.

[135] Laguerenne, "Ligera descripción de la instalación hidroeléctrica de Necaxa," p. 388.

beautiful waterfall had managed to rob the valley of its charm.[136] The rough trip to get there, he warned his readers, rewarded visitors with a vivid experience and rich scenery.

Excursions to Necaxa became a fashionable activity for Porfirians. President Diaz along with a group of top-level officials made pilgrimage in late 1905, shortly before the hydroelectric plant began lighting the capital.[137] Pleased with the results, the President promised to return for the plant's inauguration.[138] Residents of the Huauchinango district welcomed the money brought by excursionists who made their way there to visit the engineering works.[139] Visits for educational purposes were made to the hydroelectric plant. Engineer Francisco Urquidi, who had studied in Paris for three years thanks to a government scholarship, led a field trip for his students from the National School of Engineers.[140] At the site a representative of the MLP, who provided them with all the information relating to the powerhouse and the company's camp, welcomed them.[141] Students had particular assignments to be completed in the field, but they also had opportunities to enjoy the location. Students attended a splendid banquet offered by the

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[136] Joseph King Goodrich, *The coming of Mexico* (Chicago: A. C. McClurg & Co., 1913), p. 242.

[137] "President returns: spent some time at Necaxa inspecting electric plant," *The Mexican Herald*, *2* October 1905.

[138] "La Compañia de Fuerza Motriz de Necaxa: La inauguración de los trabajos, asistencia del señor Presidente de la República," *El País*, 9 October 1905.

[139] "Excursión a Necaxa," *El País*, 22 November 1905.

[140] Archivo General de la Nación, Instrucción Publica, Box 195, File 2.

[141] For the relationship of Mexican engineers and engineering students with the work at Necaxa and the MLP see Elio Agustín Martínez and María de la Paz Ramos, "Funciones de los ingenieros inspectores al comienzo de las obras del complejo hidroeléctrico de Necaxa," *Historia Mexicana*, Vol. 56, No. 1 (Jul.-Sep., 206), p. 242. On the establishment of the career of electrical engineering see "Contra la corriente. La institucionalización de la enseñanza de la ingeniería eléctrica en México, 1889-1930″, in Juan José Saldaña Coord., *La casa de Salomón en México. Estudios sobre la institucionalización de la docencia y la investigación científicas*. (Mexico: Universidad Nacional Autónoma de México, 2005), pp. 153-184.

MLP, and the Independence Day celebration held in the town of Huauchinango.[142] Later a conference provided a showcase to present the results of the trip. The students put together a presentation entitled "Our excursion to Necaxa," which included fixed and cinematographic images of the trip.[143]

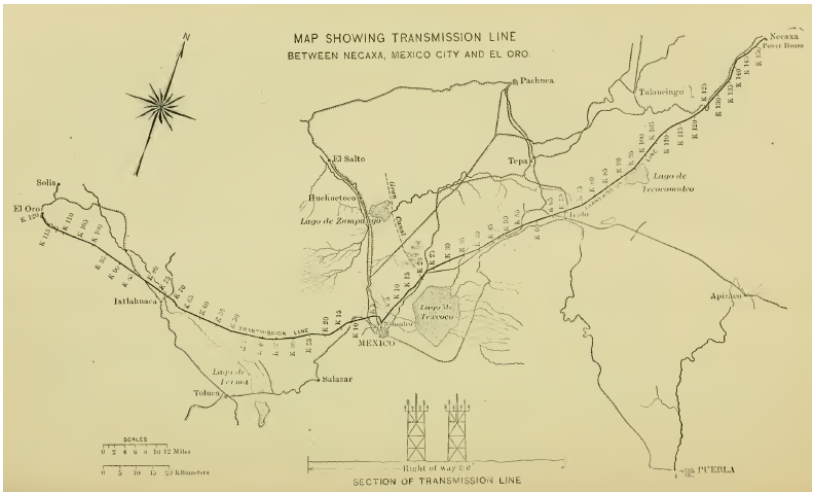

Fig. 2. Map showing transmission line from Necaxa to Mexico City
Source: F. S. Pearson and F. O. Blackwell, "The Necaxa plant of the Mexican Light and Power Company," *Transactions of the American Society of Civil Engineers*, Vol. LVIII (June, 1907).

Excursions to the falls attracted foreigners. In her accounts, Mary Barton affirmed that Necaxa had been one of the most beautiful and amazing places she had ever seen.[144] As a guest of the MLP, she felt some discomfort with the construction of the great dam across the valley was destroying the gorgeous waterfall. Escorted to the bottom of the cliff, where the stream no longer reached, she only saw the remnants of the force of the volume of water that for years had pour there until it had been tamed by man. Her escort then took her down to the riverbed where the 700-800 foot fall had once descended. The

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[142] Francisco Urquidi, "Informe que presenta a la Secretaria de Instrucción Publica y Bellas Artes el Sr. Ing. D. Francisco Urquidi, Profesor de Física Matemática en la Escuela N. de Ingenieros, sobre la excursión técnica que hicieron a Necaxa los alumnos de dicha clase," *Boletín de Instrucción* Publica, Vol. XI (Mexico: Tipografía Económica, 1908), pp. 516-520.

[143] "La Conferencia de la Sociedad de la Escuela de Ingenieros," *El País*, 22 January 1909.

[144] Mary Barton, *Impression of Mexico with Brush and Pen*. (New York: The MacMillan Company, 1911), pp. 137-152.

manager, she claimed, had admitted that the Company's meddling with nature had not spoiled the beauty of the place. Mary agreed. Although the dam blotted Nature, to her, and the waterfall had not only been destroyed but the dam had forever taken away the picturesqueness of the lake, she believed the beauty of the place persisted. Future descriptions of the area also pointed the majesty of the site despite the company's work. Maximiano Valdes, who visited the falls in 1919, eloquently asked his readers for their forgiveness as his lack of skill and the ineptitude of his pen prevented him from rendering a true description of the beauty of the painting nature had placed in front of him.[145]

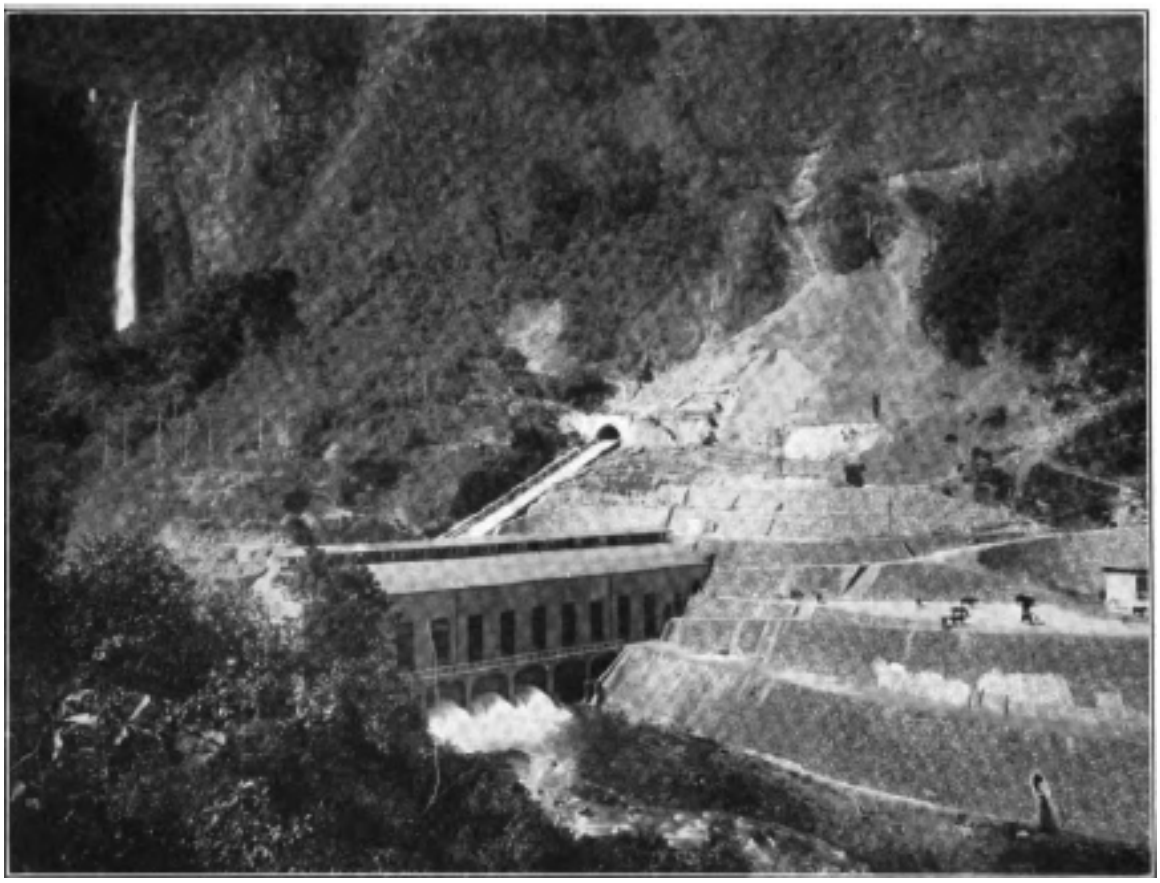

Fig. 3 View of the powerhouse at Necaxa with waterfall in the background
Source: Frank Koester, "The Necaxa plant, Mexican Light andPower Co.," *Hydroelectric developments and Engineering*. New York: D. Van Nostrand Company, 1911).

[145] Maximiano Valdes, *De Mexico a Necaxa por el "Conde de Fox*." (Mexico: Compañia Impresora Mexicana, 1919), p. 44

Reading the electric city

By the time of the Centennial of Independence, government officials, businesses and ordinary citizens had come into contact, directly or indirectly, with electric lighting and electricity at large. Public electric lighting had shone indiscriminately for thirty years over those wearing top hats on their way to the Jockey Club and those who used the stone pavement as bed and their sarapes as cover. For a decade, electric streetcars had also ran down *lagartijos* (dandies) and *léperos* (guttersnipe) alike. Factories aided by the white coal had relocated to the city where up-to-date machinery transformed the air and the lives of recently arrived rural migrants.

The Centennial of Independence celebrations aimed to showcase to the world the country's achievements and the man who had made it possible, President Porfirio Díaz. Mexico City, as the scenario where the patriotic drama was to be performed, had to embody order, progress and modernity. At the turn of the century, no better symbol met those requirements than electricity. The ideal city developed along the spinal column of the Paseo de la Reforma made ample use of this technology to edit the cityscape and render the city legible to citizens and foreigners.

By 1910 the ideal city had been clearly delineated. It included the Zócalo and surrounding streets. It then ran west towards the Alameda and then on along the Paseo de la Reforma all the way to Chapultepec. This confined area flaunted paved avenues, drainage, electric lighting and was crisscrossed by a web of cables providing telegraph, telephone and trolley service. Beyond the sanitary cordon public services were either found in an ununiformed manner or lacking altogether.

Expectations for the illuminations planned for the month of September ran high. For months the press dedicated ample space to the number of lights that were to be used and to the overall effect on the image of the city. Newspapers ran page-long eloquent descriptions of the planned lighting schemes. Among these *El Imparcial* published a front-page piece titled "Who can imagine how the illuminated metropolis will look like? The regal lighting will be as a fairy tale. Perhaps never before has the city been draped in light as it will be seen in the Centennial."[146] The towers of the Cathedral with its 14000 lights, described the note, were to give the impression of having been made out of splendid crystal, illuminated from the inside, by a terrible fire. A few days later, one of the daily's reporters did his homework by interviewing the MLP manager's office. The data gathered became the backbone for the note: "Two hundred thousand lights will form a marvelous wreath in the great Centennial celebrations."[147] The number of lights themselves sought to tell a story. The lighting of the city, it ventured, promised to be truly wonderful; one of the most outstanding elements of the celebrations. Blazing arches on Plateros Avenue, it anticipated, were to turn the thoroughfare into a golden ember.

English language dailies joined in the discussion of the plans to illuminate the capital. For the month of September, claimed *The Mexican Herald*, the city was to be a city of light.[148] On the first of the month an additional quarter million incandescent lights were to be turned, which along with the ones already installed were to add to approximately a million lights total. Most importantly these additional lights were to be

[146] ¿Quién imagina como quedara la metrópoli iluminada? Sera como maravilloso cuento de hadas la iluminación regia. Probablemente nunca se ha visto la ciudad vestida de luz, como se vera en el centenario," *El Imparcial*, 3 July 1910.

[147] "Doscientos mil focos formaran maravilloso guirnalda en las grandes fiestas del Centenario," *El Imparcial*, 10 July 1910.

[148] "Electric Lighting for the Centennial," *The Mexican Herald*, 28 August 1910.

installed in a confined area bounded on the north by Tacuba Street, on the east by the Zócalo, on the south by Cadena Street and on the west by Humboldt Street. To make their descriptions easier for their readers to visualize, their description included a map of the downtown area with marks (X) followed by a number. The X's stood for the arches that had been erected in each of the intersections and at the middle of the main streets. The number was representative of the number of lights in the patriotic colors to be installed on those arches.

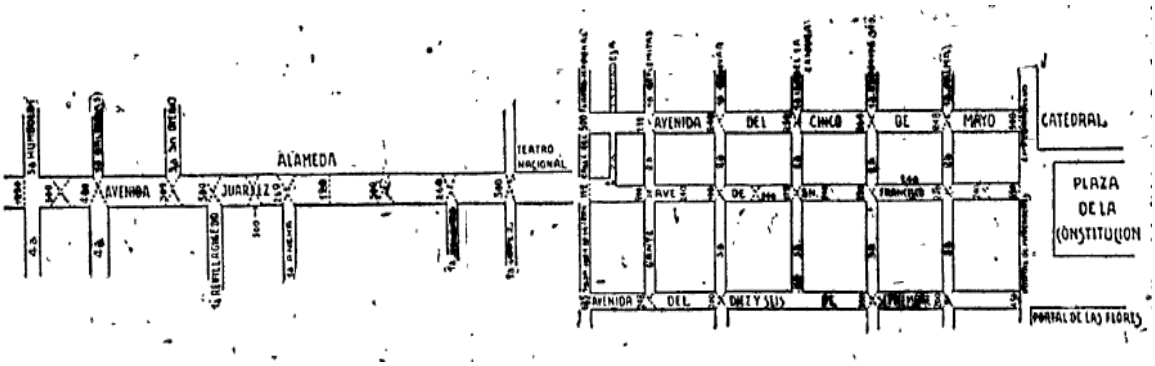

Fig. 4 Map of the downtown's lighting scheme for the Centennial
Source: "Electric Lighting for the Centennial," *The Mexican Herald*, 28 August 1910

The new rhetoric of night space edited the city down to a few idealized essentials.[149] During the nights of September, the Cathedral had been one of them. Since the late colonial period accounts about the city had provided extensive commentary on the monumentality of the Cathedral. Travelers' guides advised tourists to initiate their tours by paying it a visit. *Terry's Mexico* claimed that it was a sort of sightseer's goal.[150] It noted that massiveness and *grandeza* were its distinctive qualities.[151] Seating on the north side of the Zócalo, the Cathedral's twin towers dominated the cityscape standing

[149] Nye, 60.

[150] T. Philip Terry, *Terry's México: Handbook for travelers, with two maps and twenty-five plans*. 2nd ed. (City of Mexico, Sonora News Co.; Boston, Houghton Mifflin Co., London, Gay and Hancock, 1911), p. 273. Pages 271-292 provide a detailed description of the Cathedral as well as a historical account.

[151] The guide noted the structure measured 387ft. from north to south and 177 from east to west.

stoically beyond the line of trees in the Zócalo. At 200 plus feet tall they offered an unparalleled vantage point of view of the city and the surrounding valley. For a small gratuity visitors could see the city spread out in front of them as a vast panorama reminiscent of a city in the Holy Land.[152]

The Cathedral's architectural attractiveness and imposing height overshadowed that of the National Palace, and the City Hall on the other side of the Plaza. Electric lighting offered the opportunity to reorder the space. During the month-long celebrations, the Cathedral did not lose its preponderance, but rather it was reinvented in order to narrate a liberal pedagogical lecture of the country's republican life. As one of the most important centers of worship for the Roman Catholic Church in the country, the Cathedral stood as a symbol of the power of the Roman Catholic Church, both past and present. *Terry's Mexico* eloquently illustrated its importance as a treasury of religious moment and historical associations.[153]

At a distance the luminous towers dominated the nightscape. The structure's architectural elements were emphasized by 10,000 arch lamps and 16,000 incandescent lamps strategically placed. Up close the visitor's eyes were directed towards the luminous signs that delivered a public lecture. On the first tower the year 1810 along with the word liberty had been spelled out. The second tower fashioned the year 1910 and the word progress. One hundred years had passed from one tower to the other. One hundred years separated the achievement of independence with that of progress. A luminous sign with the word peace had replaced the section separating the towers, where ordinarily a clock

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[152] Harold R. Maxson, *A practical up-to-date guide to Mexico city and vicinity with excursions to Toluca, Amecameca, Xochimilco, Cuernavaca and San Juan Teotihuacan*. (México City: American Book & Printing Company, 1907), p. 23.

[153] Terry, p. 23.

was housed. Perhaps it had been meant for peace to replace it as a symbol of the times. Father Hidalgo who a hundred years before had directed the country towards its independence, had been joined by the national hero of Tuxtepec that now directed the republic towards progress.

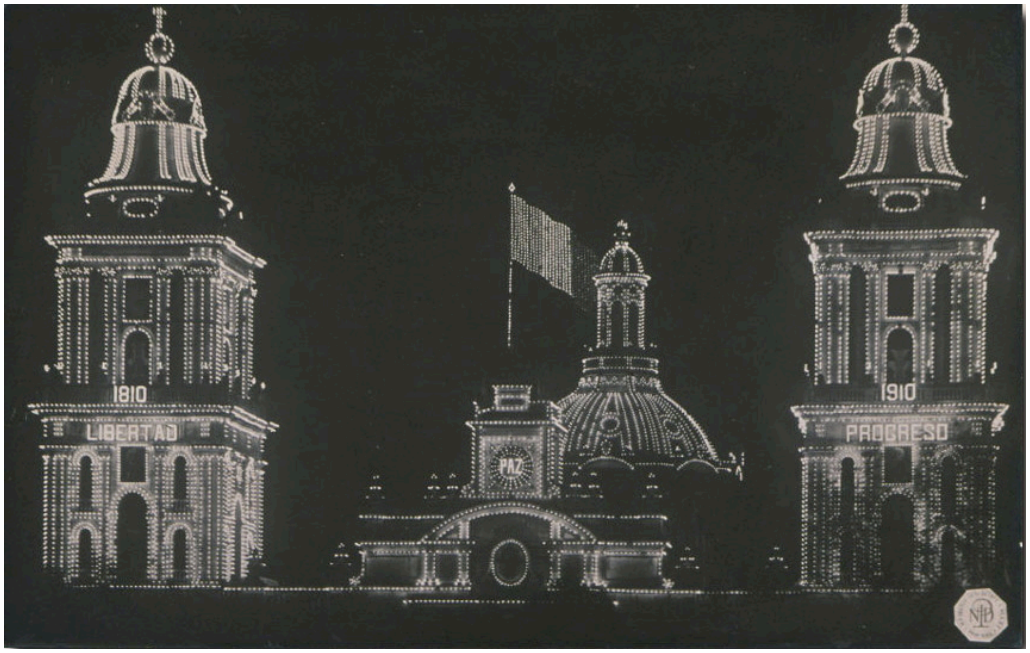

Fig. 5 Lighting scheme of the Cathedral
Source: Kahlo, *Las Iluminaciones*. (Mexico, 1910)

The overall effect of the Cathedral's lighting had surpassed expectations. Frederick Starr judged the Cathedral the most glorious sight on the night of September 15. The effect of the building against the night sky, he added, was weirdly beautiful.[154] The Catholic daily *El País* noted that the sight had been dazzled by the prodigious spectacle. It compared the overall effect of the celebrations with a kind and aesthetic-minded genius that had poured out the amphora of the treasuries of the Golconda: all the tears of love crystalized, all the iris of the Niagara. The Cathedral, it passionately

[154] Frederick Starr, *Mexico and the United States: A story of revolution, intervention and war*. (Chicago: The Bible House, 1914), pp. 65-66.

concluded, looked like Vesuvius in an explosion of stars.[155] In the 19th century the awe and reverence once used exclusively for the divine began to be applied first in encounters with landscapes and eventually transferred to certain machines.[156] Such responses to technology have been coined as the "technological sublime." The reverence expressed in the newspaper's description is evidence of this. The descriptions makes reference to the treasures of the Golconda, a kingdom in modern India famous as a diamond trade center, the Niagara falls and the volcano Mount Vesuvius in Naples. These were all references to landscapes recognized for their beauty and greatness.

Un progresometro

The introduction of electrical lighting to the September 16 had begun earlier as electricity obtained its Mexican citizenship in a piecemeal fashion. In 1889, for instance, the towers of the Cathedral were lit up at the exact moment when the president proclaimed the Cry of Dolores.[157] By 1893 the National Palace and the City Hall as well as most of the important commercial houses in the business district joined the cathedral in draping their buildings with a luminous veil. It was not until 1900 that spectacular lighting made a full-fledged appearance in the celebrations organized to welcome the new century and Diaz's reelection.[158] The lighting scheme included incandescent lights arranged to form flags, flowers and stars, as well as a portrait of the President.

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[155] "La ciudad de Méjico es un prodigio de luz," *El País,* 15 de septiembre de 1910.

[156] Leo Marx, *The Machine in the Garden*. (New York: Oxford Press, 1965), p. 197.

[157] Lillian Briseno Senosiain, "La fiesta de luz en la Ciudad de Mexico: El alumbrado eléctrico en el centenario," *Secuencia*, 60 (2004); 97.

[158] Ibid.

By the late 19th century, electric lighting had become one of the elements by which to judge the importance of a celebration. It was thereby vital for World's Fairs and patriotic celebrations to outdo previous ones and set a new record in terms of the candlepower employed. At a global stage, international exhibitions and national celebrations were measured against each other in terms of candlepower, number of incandescent lights and kilowatts. Comparisons across countries became a common way to measure progress. Speaking of the National Palace's illumination, for instance, *El Imparcial* claimed it had been better illuminated than New York during the Hudson-Fulton celebrations. Comparisons were not only made between countries, but also among commercial houses in the city.

The construction of the cosmopolitan image the city flaunted during the centennial had begun in 1880, when the idea of celebrating the anniversary with a World's Fair was first contemplated. The project amalgamated economic, social, and political interests that together facilitated the accelerated development of an ideal city.[159] The eagerness to revise street and avenues in order for them to exhibit the nation's official history had unleashed a fever of monument construction.[160] The federal government, for instance, had called upon the states to provide statues of two of their liberal heroes to be placed along the Paseo de la Reforma. In this context, the spectacular lighting scheme had converted the Cathedral into a canvas. A left to right reading

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[159] Mauricio Tenorio Trillo, "1910 México City: Space and Nation in the City of the *Centenario*," in *¡Viva México! ¡Viva La Independencia! Celebrations of September 16,* William H. Beezley y David Lorey, Eds. (Wilmington, DE: SR Inc., 2001); pp.167-197.

[160] Barbara A. Tenenbaum, "Streetwise History: The Paseo de la Reforma and the Porfirian State, 1876-1910," in William H. Beezley, Cheryl English Martin, and William E. French, Eds., *Rituals of Rule, Rituals of Resistance: Public Celebrations and popular culture in Mexico*. (Wilmington, DE: Scholarly Resources, Inc., 1994), pp. 127-150.

narrated both a liberal and a positivist interpretation of the country's centennial as an independent nation.

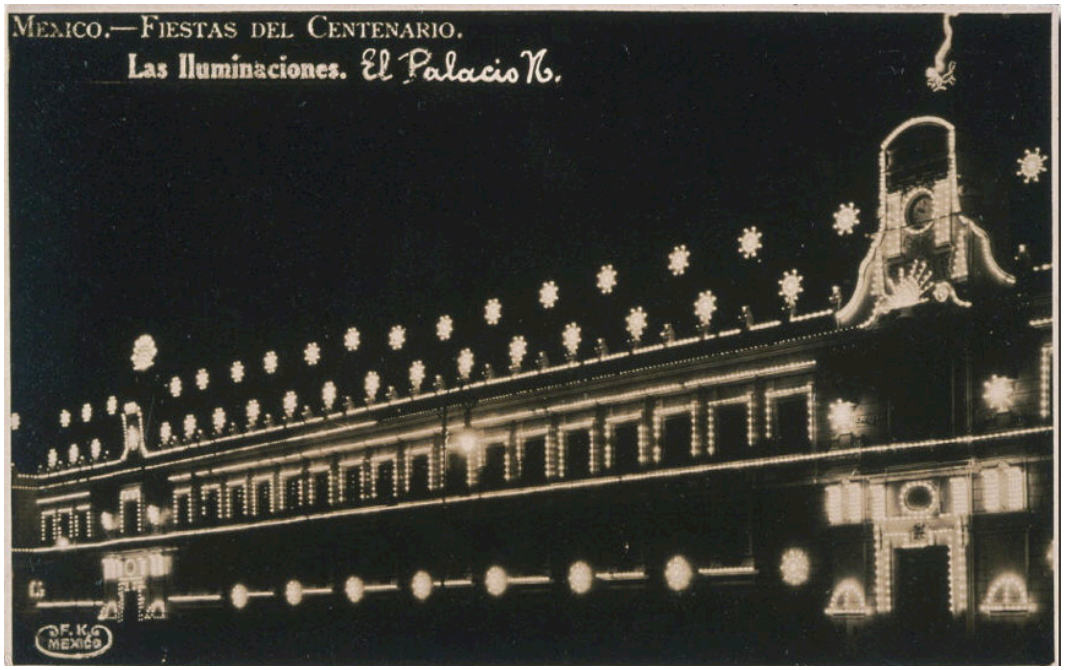

Fig. 6 National Palace illuminated for the Centennial
Source: Kahlo, *Las Iluminaciones*. (Mexico, 1910)

The National Palace, dwarfed next to the Cathedral, stood elegantly dressed to stage the main event of the night: The Cry of Dolores. Instead of serving as a canvas for a visual lecture, strings of lights framed each window and doorway, and an uniformed sequence of lights in the shape of star-rosettes were alternately lined along the structure's roof-line. Together 8,000 multi-color lights transformed the façade into a "splendor of lights."[161] The balcony received special attention with a resplandor placed above the Liberty Bell.

The government did not reserve the use of spectacular lighting. Businesses made ample use of it to distinguish themselves among their competitors and to demonstrate their attendance to the patriotic celebration. The sight on San Francisco and Plateros

[161] Starr, 61.

streets were particularly captivating. At each intersection along these streets an arrangement of wreathed lights resembling a canopy were installed. This was also done midway into the street. Shops and businesses on both sides of the streets, Starr noted, competed added combinations as well.[162] These individual lighting schemes, helped by the uniformity and lowness of the buildings, along with the canopies worked to heighten the concentration of light on these streets.

Just as statistics were used at World's Fairs as a tool of progress, the city's newspapers put emphasis on providing a breakdown of who was who in the business world based on candlepower. The recognized department store "El Palacio de Hierro," installed 6000 lights, the cigarette company "El Buen Tono," which made a name for itself for espousing technological advances in the manufacturing of their products as well as in their advertisements, had 3000; Centro Mercantil, a smaller department store, with 900; "La Esmeralda," jewelry store with 5000; the oil company Compañia de Petróleo "El Águila," with 4000.

The Mexican Light and Power Company, as one of the main promoters of the use of splendid electric lighting during the celebrations, was under considerate pressure to render the potential of electricity for patriotic ends. Along with the illumination of the Cathedral, the National Palace, and the Telegraph office, the MLP's building was included in a set of postcards titled *Las Iluminaciones*. Among the luminous arrangements used to drape the structure 6000 lights were employed in marking out the architectural details of the building. One of its main attractive features was a luminous eagle that crowned the building. The national symbol stood out against the darkness of its

[162] Ibid., 65.

background. Luminous signs spelling Light and Power, 1810, and 1910 were also part of the decorative elements. Not visible from the postcard's image, an additional electric sign "servicio a toda hora." Spectacular lighting not only allowed the company to show patriotic fervor but to advertise its 24-hour service. The MLP besides powering the million lights used in the celebration through the electricity generated at the Necaxa hydroelectric plant, promoted patriotism among residents in the city. Since early summer the company had advertised in the capital's dailies a creative service. It offered to lease Tunsten lamps free of charge.

Fig. 7 Mexican Light and Power offices illuminated for the Centenario
Source: Frank Kahlo, *Las Iluminaciones*. (Mexico, 1910)

Postcards as ephemeral witnesses of historical events provide a reading of the past. In its limited space, a postcard seizes a sentiment, an impression or just an observation worth communication.[163] It survives as the rendition of another set of eyes that decided that the image in front of them was worthy of traveling the world and

[163] Margarita de Orellana, "El poder de la memoria fugaz," *Artes de México* 48 (1999)

thereby becoming part of the collective memory.[164] Their power to disseminate messages made postcards from the very early stage of their development promulgators of official propaganda and cultural stereotypes.[165]

Guillermo Kahlo was the author of "Las Iluminaciones." The German immigrant who had began his artistic career taking pictures of the construction of the Boker Building at the turn of the century, identified himself as an specialist in buildings, factories, machinery, etc.[166] He opened his studio at the height of the Porfiriato, when the regime was thirsty for images that documented the signs of progress consolidating in the country. Kahlo's artistic interests met those of the regime's quite perfectly. As part of the many projects undertaken for the Centennial celebrations, the Ministry of Treasury, headed by Jose Yves Limantour, commissioned Kahlo to make a visual record of the constructions underway throughout the city. It was the photographer's outstanding abilities in his use of light and the regime's obsession with documenting its accomplishments that worked to make him one of the best in the trade in capturing the electric city.

The set of postcards titled "Las Iluminaciones," confirmed the role electrical lighting played in the celebrations. The majesty it granted to the public drama on the streets of the city was not only recognized by the national and foreign press, national and international visitors, but the images they created in the darkness of the night were deemed worth of being distributed beyond their immediate time and place. If the use of

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[164] Ibíd.

[165] Gloria Fraser Giffords, "La Postal Mexicana: Ecos Diversos," *Artes de México* 48 (1999).

[166] John Mraz, *Looking for Mexico: Modern Visual Culture and National Identity*. (Duke University Press, 2009), p. 39-42.

electricity had altered the way citizens experienced their national symbols, thanks to photo postcards the experience could be extended to those unable to attend the celebrations. They carried in their limited space the message of progress and modernity that had been put on display far beyond the limits of the ideal city.

Conclusion

An ad for luminous signs by the MLP admonished readers who made use of ordinary signs. Their service, it warned, concludes at sunset. If on the contrary, a luminous sign is put to use, the ad concluded, it worked for twenty-four hours announcing who you are, where you are located, and what your business is.[167] This around the clock message is what the Porfirian government was after. Electric lighting was to allow for the creation of focal points in the night's skyline unto which a liberal interpretation of the country's history could be painted. It served as an unparalleled advertising medium to the regime's slogan: order and progress.

Spectacular lighting was valued as a medium and a message. Electric lighting was deemed as one of the most eloquent demonstrations of the nation's progress.[168] Porfirians acknowledged the power of the messenger and sought to sprinkle the message throughout the ideal city. Electricity had come to transform the appearance of the city and the way it was experienced.

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[167] *El Diario*, 9 September 1910.

[168] *El Imparcial*, 28 August 1910.

CHAPTER II
Muerte por machucamiento:
Collateral damage of electric traction in Mexico City.

A little past midnight on February 1, 1902, Benjamin Gutierrez, driver of the Mexico Electric Tramways Company (METC), spotted something lying across the rails of the Tacubaya line. He stopped the tram and immediately notified a couple of *gendarmes* on nearby streets. At the light of their lanterns, the driver and gendarmes walked the railway and found what appeared to be human body remains. They first came on human legs; A few feet later, they found a torso with the ribs torn to pieces; Few feet further, they located scattered remains of the intestines, and finally, they found a decapitated head. The trail of remains began near the Indianilla, the tramway warehouse and continued for about two or three hundred meters along the railway. Police inspector Palacios had the scattered remains picked up and placed on a stretcher. Small shreds of fabric adhering to the flesh seemed to indicate that the victim belonged to the poor classes. Identification, nevertheless, was impossible, as the face had been completely disfigured. It was also impossible to tell exactly how the accident had taken place. It appeared that the accident had occurred in the first hours of the night, and that several streetcars had ran over the corpse shredding it to pieces. Palacios proceeded to the Indianilla car house to inspect the cars that had serviced the Tacubaya and San Angel lines the night before. He found traces of blood and shreds of fabric on the wheels of several cars. His next step was to find out which drivers had worked those lines the night before.

This scene was not unique; similar ones had brought government officials, this private company, and the general public together to face a turn-of-the-century problem:

electric streetcar accidents. The inauguration of electric traction in January 15, 1900 had placed Mexico City on par with major American and European cosmopolitan centers, which had begun the electrification of their urban railway systems a decade earlier.[169] The presence of trolleys situated the country's capital among modern nations and made those Mexicans who rode them by extension modern citizens, even if it was only for a matter of minutes. As riders of the electric streetcar, ordinary people became consumers of electricity. In addition, many others such as the unidentified man of the Tacubaya line were consumed by electricity. As accidents took place on the streets, and most of them in the light of day, they became public spectacles of a darker side of a modern electric metropolis. These were disorderly spectacles that hindered the Porfirian government's mantra of order and progress.

Electrified streetcars embodied both the tangible and imagined notions of Porfirian modernity. They complemented the picture of a modern cityscape with paved and lighted boulevards and avenues crisscrossed by telegram, telephone and electric lines. They connected the commercial and business city center to the newly founded *colonias* to the west and the leisure offered by suburban areas such as San Ángel to the south. They afforded faster and more comfortable means of transportation to a fast-growing population in an expanding urban center.

The disorder brought about by streetcar accidents threatened the ideal city envisioned by Porfirian urban designers. By going against the proper use of the streets in the modern city, these accidents joined everyday practices such as public urinating, defecating and drinking which authorities sought to reform as they were deemed them

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[169] P. McKay, *Tramways and Trolleys: The Rise of Urban Mass Transport in Europe*. (Princeton: Princeton University Press, 1976).

unaccepted practices in a modern society.[170]

The public nature of electric streetcar accidents meant that city residents learned about them one way or another. The fact that they were numerous accidents in any given week, also meant that many were indeed eyewitness to them. As the symbol of improved transportation, as well as a face of the violence of modernity itself, electric streetcar accidents found plenty of space in newspapers, penny press, songs, poems, *exvotos* and in many other popular outlets of the day. Individuals seeking legal remedies for the loss of limbs, lives or property, as well as the authorities' pursuit of those they thought to be responsible for accidents, also left valuable evidence of their struggles. Finally, inventors, as evidence in the long trail of patent applications, worked hard at the task of ameliorating electric streetcars through safety devices such as *salvavidas* (lifeguards). All of these sources provide documentary evidence of how electricity was transforming the daily routines of city residents, how electricity was being debated among different sectors of society and how its users were shaping it. Whether by first-hand experience, newspaper or other popular outlets of the day, city residents began to exchange details and impressions of accidents, who they considered to be responsible and what needed to be done to reduce them.

Electric traction in Mexico has been studied primarily as an improved form of transportation. Little do we know of how it altered the cityscape and the daily routines of the capital's residents, and the contradictory uses and meanings Mexicans made and gave to the *eléctricos*. Understanding that a machine's social reality is constructed, and emerges not only through its use as a functional device, but also through being

[170] For a detailed discussion of these everyday practices that threatened the ideal city see Pablo Piccato, "Urbanistas, Ambulantes,."

experienced as part of many human situations which collectively define its meaning,[171] this chapter takes to the streets and transverses Mexico City aboard electric streetcars in order to piece together the ways in which the *eléctricos* altered daily life and the uses Mexicans made of it. Focusing on the debates surrounding accidents, this study argues that accidents and the responses to them did not question the modernization efforts or advocate for the return of older modes of transportation. These accidents, their public discussion and debate, were not a counter narrative of modernity; instead, they were the embodiment of modernity in the making. Their discussion embodied the growing anxieties of a society in their quest for modernity.

The concert of modern civilization

Upon arriving to Mexico City on July 2, 1909, Jacinto S. Garcia, a business representative of the Argentine government, exclaimed, "you were right Mr. Grousac![172] Throughout the route there are no longer any *Teocallis,* or Aztec pyramids, or any remains of the ancient Toltec or Maya civilizations!" "Instead," he added, "there were beautiful and animated streets as lively as those of Madrid, as urban as those of Vienna, as populous as those of New York, with their smooth-paved cement sidewalks, with their impeccably paved streets, superb electric streetcars full of passengers, hundreds of luxury and rental carriages, and thousands of automobiles forming the concert of modern civilization and the backbone of human activity.[173] A special report on Mexico City

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[171] Nye, *Electrifying America*, p.ix.

[172] Reference to French-born Argentine writer Paul Groussac.

[173] Jacinto S. Garc*ía*. *Memorias íntimas de México: a propósito de la revolución Mexicana*. (Lima: Fondo Editorial Universidad Nacional Mayor de San Marcos, 2005), pp. 24-25.

published in the summer of the same year by the *Electric Railway Journal* also hailed the transformations that had taken place in the Aztec capital. The journal invited visitors to move beyond their first impressions upon encountering men riding their donkeys with their burdens on their backs and who lived in mud huts. Those were practices and customs, the report added, still being practiced by the lower classes. The journal invited visitors to carry out a closer inspection of the city, which would reveal to the traveler that he was indeed in a "modernized ancient city," in which most people rode in up-to-date electric cars.[174] In fact, the article's author argued, "the electric railway in Mexico City enters more intimately into the life of the citizens of the Aztec capital than probably any other of the improvements which have been introduced into this ancient modern city within the last 100 years." According to the journal, the Mexican depended on the new mode of transportation for every aspect of everyday life. It entered into the citizen's pleasures because it took him to and from "his chief source of amusement" the bull fight; it allowed him and his family "to attend any or all of the innumerable festivals in honor of the saints;" he also used them to transport "his household goods and domestic animals," and ultimately, it was the electric tramway that "takes him to his last resting place after death." The electric tramway had so intimately penetrated the daily life of the city's residents that it "performs more important functions in the daily life of the people than fall to the lot of city railways elsewhere."

Electric streetcars got electricity to the cars from the Indianilla powerhouse, where it was generated, through overhead wires were installed over city streets. Streetcars

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[174] "Conditions of electric railway operation in Mexico City," *Electric Railway Journal,* Vol. XXXIII, No. 18 (Jan-June 1909), pp. 812-820. These are the lines that were electrified during 1900 - Mexico-Tacubaya –(January 15); Mexico-Guadalupe (February 8); Peralvillo & Belem (April 9); Tacubaya-Mixcoac (May 1); Mixcoac-San Angel (June 14); Mexico-Tlalpam (October 29); Chapultepec-Dolores (November 1).

would connect to electric wires via a long pole on their roofs. At the Indianilla car house, enormous steam engines turned huge generators to produce the electricity to power the cars. On the day of the inauguration, January 15, 1900, compact crowds stood along the route from the Indianilla powerhouse to Tacubaya and back to Chapultepec to welcome the improved means of transit. Spectators were not satisfied with merely attending the opening ceremony, and they rushed around the cars in hopes of being among the first ones to ride them. Many others, primarily youngsters, ran after the trolleys until they were physically exhausted.

From their inauguration, electric traction in the *Ferrocarriles del Distrito* indeed expanded rapidly. By the end of the first year of electrification, 81 kilometers had been electrified, accounting for 31.7 percent of the nation's existing 255 railway kilometers.[175] Indeed, by the end of 1901, the company Director's report declared, "all the more important lines are being worked by electricity."[176] Within two years the percentage of electrified tramway had jumped to 48.3 and it reached 63 percent by the end of 1904. An astounding 70 percent, that is 185 kilometers of the total 265 kilometers, were being run by electricity by 1908. Electric traction expanded rapidly and resembled the path it took north of the national border. In the United States, 28 percent of the railway kilometers had been electrified by 1890, and 84 percent of the by the end of 1895.[177] The development of electric traction in Mexico City's railway system stands in contrast to the British case. By the end of 1895, only 6 percent had been electrified in Great Britain,

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[175] Percentages have been computed by the author based on data on electric traction development reported in AGN, SCOP, Annual reports.

[176] AGN, SCOP, 3/311-1? -- "The Mexico Electric Tramways, Limited. Director's Report" (June 11 1902).

[177] McKay, *Tramways and Trolleys,* p. 71.

which doubled in the following three years, and it reached 38 percent by the end of 1902.[178] In other words, within merely two years of the introduction of electric traction in Mexico City, it already surpassed Britain's by 10 percent. In contrast to their European counterparts, by the end of that same year, virtually all-German lines were electrified.

At the same time that older railway lines were gradually converted from animal to electric traction, new ones were built originally as electrified lines. Animal traction did not only cede kilometers to electricity, but as the railway network grew, animal traction was employed to penetrate new areas that were not considered profitable to be run by electricity. The 60 percent (153km) of the railway ran by animal traction in 1900 decreased to 21.4 percent (44km) by the end of 1904. Although the following year, it increased to 29.4 percent as 25 kilometers of the expanding railway system were all ran by animal force. Steam power, on the other hand, saw little change in the same period. It accounted for 8 percent in 1900, and by the end of 1908, 7 percent was still being powered by steam.

Table 2: Electric Traction Development

Year	Total Kilometers	Electricity	%	Animal	%	Steam
1900	255	81	31.70%	153	60%	21
1901	251	107	42.60%	126	50%	18
1902	240	116	48.30%	105	43.70%	19
1903	234	129	55%	86	36.70%	19
1904	205	148	63%	44	21.40%	14
1905	234	148	63%	69	29.40%	16
1906	255	173	67.80%	62	24.30%	19
1907	257	176	68.50%	61	23.70%	19
1908	265	185	70%	60	22.60%	19.8

Source: Percentages have been computed by the author based on data on electric traction development reported in AGN, SCOP, Annual reports.

[178] Ibid, 73.

Passenger traffic presented a telling picture of the sweep electric traction took in the country's capital. In 1896, horse cars known as *tranvías de mulitas* (horse cars) carried 21,734,054 passengers. Only six years later, electric streetcars, known as *los eléctricos*, carried twice the passenger volume (42,602,194) and by the end of 1908, they transported over 70 million passengers. These dramatic increases not only show the population increase in the metropolitan area, but also the fact that the supply of transport had been greatly expanded by electric traction. Electric traction, along with the extension of older lines and the building of new ones, meant more frequent and faster service. The new energy also allowed for the increased capacity to carry passengers as the tramway could be enlarged to double or even triple their carrying capacity.

Global figures illustrate a clear and quick break with older energy sources in urban and interurban transportation. *Eléctricos* not only offered faster and more frequent service for passengers, but it also provided other services. Funeral transportation provided by the *eléctricos* remained steady throughout the first years averaging about 8000 services per year from 1900-1906. Freight platforms on the other hand doubled during the same period, bringing twice as much revenue as that brought in by the funeral service. The rental of special cars was about 10 percent of that of the funeral cars. Aboard these special cars prominent families organized what were called "trolley parties." Coverage of these parties frequently made their way into the social pages. On June 1 1901, a number of families from San Ángel, held an evening trolley party that departed from the Zócalo at 8:30 p.m. aboard a double-decker car floodlighted with green, red and white electric lights.[179] Inside the car, an orchestra, which played throughout the journey,

[179] *El Imparcial*, 1 June 1901, p.2.

enlivened the *lunch* that was served aboard the car. An orchestra in San Ángel welcomed the guests, where they danced the night away.

By 1907, the METC also offered comfortable transport for the thousands of tourist passengers that annually arrived to the country's capital. According to their promotional booklet, their special "Seeing México" trains were "undoubtedly the handsomest street railway palace cars on the American continent."[180] They promised the tourist luxury transportation to "every point and colony within the jurisdiction of the Federal District." In every special trip, parties were to be accompanied by a competent guide, who spoke both English and Spanish, and who described for them all the interesting points along the route. The company daily offered one morning and one afternoon trip, which they claimed had been especially established to acquaint visitors with all-important points reach by the company's lines. These trips provided visitors an idea of the City, its varied industries, its people, and architecture, something impossible, they argued, by any other means. Aboard these cars, tourists received a constant "changing panorama of historical interest, combined with pleasure and romance." The future "Mecca of the West," claimed the brochure, also offered the most varied climates for every physique rivaling the most healthy countries. When considering the extent of "the territory covered, the points of interest visited and the luxuriousness and comfort of the service," they admonished it would be "a most regrettable omission in your tour…should you fail to accompany us on one or more of our sight-seeing trips."

Classes had long categorized city transportation. There were for instance three classes of rental carriages "designated by little tin flags of different colors displayed in

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[180] Compañía Limitada de Tranvías Eléctricos de México, *Alrededor de México: Visita en los carros especiales de la Compañía Limitada de Tranvías Eléctricos*. (México: Tipografía y Litografía Müller Hermanos, 1907), pp. 1-39.

the disengaged vehicles."[181] First-class carriages donned a blue flag and could be rented for a peso an hour.[182] The second-class service was identified by blue flags with an hourly rate of $.75 cents. The cheapest carriages were those festooned with a yellow flag with an hourly rate half of the first-class carriage ($.50 cents). Prices doubled from 10pm to 6am and during Carnival Tuesday and Day of the Death.[183] By 1906, U.S. visitors were advised to agree on the fare with the coach driver before setting out.[184] Fares, the source added, should not surpass one peso for a red-flag coach or $1.25 for a blue-flag coach, " which included the transportation of hand-baggage, which visitors were warned against letting the driver place on the front seat.[185] The color-coded cabs intrigued Mary Barton in her stay in the city. In her accounts she recognized that she had not found out what the color entail. Sometimes one was better than the other, but other times, they were equally bad.[186] Mule cars were also color-coded with first-class cars painted yellow, and green for second-class cars.

As earlier modes of transportation, classes also divided electric streetcars. Motorcars were usually all first-class cars and attached trailers were second-class cars. There were also second-class motorcars. Color-coding was also implemented in electric

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[181] Grace Owen Browen, *The tour of the 400 to Mexico*. (Chicago: Hartzell, Lord Co., 1907), p. 51.

[182] *México y sus alrededores: Guía para los Viajeros*. (México: Tip. Luis B. Casas, 1895), p. 27. This traveler's pamphlet was prepared, according to its author, to provide an affordable guide to the great number of individuals expected to make a pilgrimage to the city in October of that year for the coronation of the Virgin of Guadalupe.

[183] Ibid.

[184] Harold R. Maxson, *A practical up-to-date guide to Mexico city and vicinity with excursions to Toluca, Amecameca, Xochimilco, Cuernavaca and San Juan Teotihuacan*. (México City: American Book & Printing Company, 1907), p. 5.

[185] Ibid.

[186] Barton, 74.

streetcars with all first-class cars painted an orange color and second-class cars green.[187] Mary Barton could not imagine why her friends were so 'haughty' about the second-class cars, and let them go by until a first-class car arrived.[188] Barton came to understand her friends' behavior when one day accidently boarded a second-class. The experience was unforgettable. The car was very crowded with dirty people, and the floor was indescribable.[189] A contemporary handbook for travellers advised visitors to learn which was the first-class car, warning that the second-class cars were "usually stuffed with ill-smelling *pelados*."[190] Mercedes Godoy recalled that the poor classes rode the cheaper second-class cars. She noticed that they were quite crowded in the mornings, at noon, and in the evenings on weekdays, and packed on holidays and Sundays.[191]

The classification of tram service extended beyond living passengers, as even in death class distinctions existed in the funeral service. By 1909, the METC offered a wide range of funeral services with prices from $3.75 to $140 pesos. Undertakers arranged the transportation as they had special arrangements with the company. Clients indicated the amount they wanted to pay and the company would furnish the cars and decoration for any grade of funeral.[192] The ample use of this service, as well as its variety, captured the attention of visitors as they penned detailed descriptions of their experiences. Grace

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[187] "Constructional and operating features of the Mexico City tramways," *Electric Railway Journal,* Vol. XXXIII, No 23. p.1020.

[188] Mary Barton, *Impression of Mexico with brush and pen, with twenty illustrations in colour*. (New York: The Macmillan Company, 1911), p. 74.

[189] Ibid, 75.

[190] T. Philip Terry, *Terry's México: Handbook for travelers, with two maps and twenty-five plans*. 2nd ed. (City of Mexico, Sonora News Co., 1911), p. 236.

[191] Mercedes Godoy, *When I was a girl in México* (Boston: Lothrop, Lee & Shepard Co., 1919), p.

[192] "Conditions of electric railway operation in Mexico City," *Electric Railway Journal* Vol. XXXIII, No. 18 (May, 1909), p. 818.

Owen Browen, for instance, observed a funeral cortege of streetcars, while she waited for a Tacubaya car. The Dolores Cemetery, she noted was just beyond Chapultepec, and the endless march of funeral corteges made the Avenue a *Via Dolorosa*. A platform car painted black and capped with a cross, which carried the coffin on a stand, led the funeral cortege. Two or three closed trailer cars marked special carried the mourners. The rich only used hearses.[193] Jasper T. Moses noticed that tramway funerals were common among middle and upper classes varying in degrees of elegance and expense. The funeral of a rich man, he explained, was noticeable by the string of special cars several blocks long, and all who wish could get a free ride to the cemetery.[194]

In accordance with a clause in the company's concession, the corpses of paupers were to be carried for free, so whether rich or poor, coffins rode on the tramline in a company car. Alec Tweedie noticed that in the case of dead children a white car was used. But more gruesome for her were the public funeral cars. She was particularly intrigued by what she called "sardine boxes," black wooden vehicles which transported hired coffins. These cars were called *gavetas* (drawers) carrying eight compartments holding the same number of coffins.[195] Given that the cemeteries were miles out of town, visitors, mourners and coffins alike arrived all by tram. Among the curiosities that caught her attention at the Dolores Cemetery was a sign that listed the six different classes of graves available.

Although the company claimed to employ the lines of least traffic for funeral traffic as well as special tracks that run directly to the cemetery, funeral cars were seen as

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[193] Browen, 70.

[194] Moses, 68.

[195] "The funeral cars of México," *Popular Electricity Magazine*, Vol. VI , No. 1 (May, 1913), 377.

causing congestion on the streets. Mary Barton, for instance, noted how the endless procession of cars carrying the mourners, stopped all tramway traffic to the detriment of living passengers and pedestrians alike. To individuals unfamiliar with the long lines of black hearses their presence was cause of alarm. A young electrical engineer from Schenectady sent by General Electrical Company to Mexico rented an apartment for him and his wife on Avenida Chapultepec.[196] Within days from their arrival, the engineer found his wife in tears hysterically insisting on returning to the United States. The endless parade of funerals cars had made her believed that a plague that taken at least half of the population.

With the exception of a few routes, all circulation of electric streetcars departed and ended at the Zócalo.[197] The great movement of individuals, carriages, and streetcars in the city center captured the gaze of visitors. Alden Buell Case believed the plaza actually placed a spell on the eye. He noticed how streetcars continually arrived and departed, while fine carriages and carts were always on the go. He was equally fascinated by the sheer number of people as well as the different types of individuals one could find in the area. He noticed that among the multitude of pedestrians one could equally run into merchant princes, beggars, policemen and drunkards, some fashioning refined hats while peons were scarcely clothed. Grace Owen Brown on her first impression of the great plaza said, "The Zocolo [sic] is the heart of the city. [198]

Traveller's guides soon began to incorporate streetcars in their strategies to offer

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[196] "The Funeral Cars in Mexico City," *Popular Electricity Magazine*, 376-377.

[197] The system of mule cars had also used the Zócalo as a terminal. See Harriott Wight Sherratt, *Mexican Vistas seen from highways and byways of travel*. (Chicago and New York: Rand, McNally & Co., Publishers, 1899).

[198] Browen, 53.

their readers a thorough tour of the city. They advised when it was convenient to use them and when it was better to take other means of travel. Harold R. Maxson detailed traveller's guide, for instance, provided a comprehensive program to make the most of the visitor's stay in the city. Tourists were to spend half of the first day of their stay becoming acquainted with San Francisco street and the many interesting places it offered among which were the Jockey Club, the churches of San Francisco, San Felipe de Jesus, and La Profesa, the shop windows, the Sonora New Company, the Iturbide Hotel, the Zócalo and the Cathedral. The afternoon, however, was advised to be spent at Coyoacán. Using the trolleys for transportation and to see the sights of the city.[199] The morning of a second busy day, he suggested be dedicated to the National Pawn Shop, the Flower Market, and the National Museum. The Paseo de La Reforma was to be fully experienced later that day in their route to Chapultepec Park. Although accessible by tram, he recommended the coach to see the beauties of the Reforma Boulevard.[200]

Exploratory visits to the National Palace, the Thieves Market and the Merced Market on the third day were to be followed by an afternoon in Guadalupe, known as one of the nation's most interesting villages.[201] Streetcars, noted the guide, departed every fifteen minutes from the north side of the Zócalo, in front of the Cathedral.[202] At the end of their ride passengers could step off the streetcar to find themselves at the footsteps of the Cathedral of Guadalupe. Mrs. Alec-Tweedie vividly illustrated her failed attempt to board a streetcar bound for Guadalupe during her stay. On the eve of the Día de

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[199] Maxson, 25.

[200] Ibid, 53.

[201] Ibid, 77

[202] Ibid.

Guadalupe, Tweedie reached the Zócalo and found every single tram of the Guadalupe line overcrowded. She believed that some of the pilgrims, who had arrived late to the city, had invested their few cents on catching an eléctrico to the shrine. Having walked barefoot hundreds of miles, she thought, the Indian was taking advantage of what modernity had to offer and completed his pilgrimage in an electric carriage.

Fourth-day activities in Maxson's itinerary included a tour of the Spanish Cemetery, which required boarding a car marked "Atzcapotzalco." At Tacuba the tourists had to transfer to another car that was to take them to the cemetery. Once back to Tacuba, for some distance, a different route made the ride back to the city. A few minutes from Tacuba, visitors were told to expect the Noche Triste Tree, at Popotla on the right-hand side of the car and it was recommended to exit the car at that point to closely examine the tree. The afternoon, however, was to be enjoyed at Tacubaya. A twenty-five minute ride from the Zócalo, the car marked "Tacubaya," was to take the visitor to one the prettiest suburbs imaginable.[203] On the trip back to the city, visitors were warned to notice on the right-hand side of the car track, the vestiges of the aged aqueduct that used to carry water to the residents of the City from the spring at Chapultepec.[204]

The following six days were painstakingly organized to expose visitors to the city's main attractions and those found in close range. Among those included was a day trip to La Viga Canal. The streetcar would lead passengers on the right bank of the Canal, under towering *ahuehuete* trees, as far as Ixtapalapa, at which point they were to make the rest of the trip by boat.[205] On the seventh day, a San Lázaro marked streetcar in

[203] Ibid, 102.

[204] Ibid, 104.

front of the Cathedral would take them to the San Lázaro Station of the Interoceanic Railroad. There they would ride a train to Amecameca to engage in a number of activities, particularly an ascent of Popocatepetl. Days eight, nine and ten included day trips to the pyramids of the sun and the moon, Toluca and Cuernavaca.

Maxson's guide also provided its readership with a list of other points of interest in the Valley of México, as well as the wide range of amusements found in the city. At the Zócalo, passing out Independencia Street, visitors could board streetcars marked Toros, which for ten cents would take them to witness a bullfight. There a general air of festivity received the passenger with vendors lining the roadway selling all kinds of foods as well as boys and men rushing at every passer-by, to sell "sol" or "sombra" tickets.[206] Tweedie had made the mandatory pilgrimage to the bullring and once there the chaotic scene absorbed her with crowds thronging the thoroughfare. Electric trams, and horse cars arriving constantly with passengers standing on the aisles of the cars, or hanging like flies to the outside platforms.

The city lay accessible to tourists as never before. Maxson advised his readers that almost every corner of the city could be reached far more easily by the careful use of the trams.[207] Mary Barton made a similar assessment while Jasper T. Moses, the president of the Christian Institute, marveled at the improvements made on the city and argued that the city's tram service could put to shame any American city.[208] Alden Buell Case made a

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[205] Ibid, 123.

[206] Tweedie, 177. For an excellent analysis of the social division of bullfight audiences see Beezley, *Judas at the Jockey Club*.

[207] Maxson, 8.

[208] Jasper T. Moses, *Today in the land of tomorrow: sketches of life in México*, 2nd ed. (Indianapolis, IN: The Christian Woman's Board of Missions, 1909), p. 59.

similar assessment on the Paseo de la Reforma that would make any New World or Old World city proud. Indeed, commentary on the streets found plenty of space on foreign travellers' accounts. Ralph Waterman Vincent deemed the capital a comprehensively modern city with principal streets asphalted and the entire city liberally lighted by electricity, with an excellent tram system that connected it to its suburbs.[209]

Maxson's guide claimed almost all principal streets, with the exception of the Paseo, were asphalted and those in the new colonias were broad and well laid out. The width of streets had indeed become worthy of commentary in travelers' accounts. Mercedes Godoy after observing a parade on San Francisco Street detected that only three cars could pass as it was not a very wide street.[210] Indeed most of the streets in the commercial and business center were somewhat narrow, with the exceptions of Cinco de Mayo and Avenida Juarez, and a few others.[211] The *Electric Railway Journal* report explained that given the narrowness of the streets in the area, the tramway company had resorted to using reverse curves in some places in rounding corners to make possible to run double-truck cars everywhere.[212] The report added that among other things, the laying out of wider streets in the last few years had greatly improved the physical and sanitary conditions of many areas.[213] Alec- Tweedie vividly captured an everyday scene of removing furniture in the downtown area. The absence of vans forced individuals to have

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[209] Raplh Waterman Vincent, *Mexico today and tomorrow; an outline of the present earning power and future possibilities of her railroad systems. Facts, figures and suggestions regarding the principal traffic producing centers* (New York, New York News Bureau Association 1906), p. 65.

[210] Godoy, 35.

[211] Ibid, 61.

[212] "Conditions of electric railway," *Electric Railway Journal,* 09), p. 813-815.

[213] Ibid, 815.

their furniture carried by foot. She observed the performance of four men who paraded a heavy wardrobe through the streets, and given their narrowness considerably congested by trams, the simple task made matters more difficult.[214]

***Pues si el tranvía mata*….(If the tramway kills, well….)**

Eléctricos earned and reaffirmed their deathly force on a daily basis and citizens and companies alike soon figured out a way of exploiting their ill reputation for their own ends. Several companies showed no qualms with using them in their marketing advertisements. The Mojarrieta Digestive, a medicine for digestive problems, claimed that although victims of the electric streetcars could be counted in the thousands, they were not as numerous as those that suffered from stomach problems. El Buen Tono, a leading cigarette manufacturer, which had been applauded by commentators for educating its customers on technological innovations, had also integrated streetcar accidents into their advertising campaigns.[215] The company made ample use of the lithographs to illustrate stories in which their cigarettes played a leading role. One of the company's cartoon strips, for example, illustrates the story of the Gutierrez de Taumarca family in their visit to the capital. Don Trini, the father, had been warned about the trolleys and he was running away from them as if they were the devil himself. The family, however, did not vacillate to cross a trolley's path when they spotted a wheat thresher machine. Their carelessness sent the entire family under the trolley's wheels. The poor foreigners were left as flat as carton figures. The motorista descended from the trolley and immediately began filling a windbag with the smoke from "an excellent

[214] Tweedie, 208.

[215] Bunker, "Creating Mexican Consumer."

cigarette." He then introduced the smoke to the bodies of the *machucados*. It was a complete success. The entire family was left as good as new and the motorista made them smoke some more cigarettes to forget *el susto* (the shock). The family enjoyed them so much that afterwards they kept trying to be run over once again just to enjoy some additional cigarettes.

Fig. 8 Machucados in El Buen Tono cartoon strip
Source: *El Imparcial*, 16 October 190

The idea of people wanting to be run over, however, was not out of touch with reality. From early on city residents had become aware that the likely outcome of tram accident was death. Justo Guerrero, for example, had been drinking his love troubles at a cantina, when he came to the conclusion that life was no longer worth living. Unable to carry out his plan any other way, he decided to jump on the railway as a Tacubaya trolley crossed the street. The driver managed to stop the car and Guerrerro only suffered minor injuries.[216] Valentín Urquiza, driver in the Peralvillo line, also managed to stop the car before hitting a gentleman that stood on the railway waiting for the trolley to end his life. The suicidal man was arrested at the driver's request. Another frustrated suicide attempt was that of a young man, who upon discovering that his brother had poisoned himself to death, jumped on the railway at the moment that a trolley was approaching. The driver managed to stop the trolley before touching the distressed brother.[217]

Individual also made use of eléctricos in their love affairs. On February 5th 1901, gendarme Francisco Valdez, in charge of Libertad and Tepozán streets, escorted Enriqueta Vásquez, her lover Miguel Vidal and trolley car driver Joaquin Sánchez to the police station.[218] A pedestrian had notified Valdez that on Tepozán Street a man was quarreling with a woman. Upon arriving to the area he found Enriqueta under the wheels of a Peralvillo line trolley, driven by Sánchez. Sánchez declared that on his way to Chapultepec, at the height of Tepozán street, he noticed that at a short distance a couple was standing at edge of the sidewalk. At the moment that he was passing them by, the woman had *intentionally* jumped on the railway. Even though he reacted and tried to halt

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[216] *El Imparcial,* January 6 1902.

[217] *El Diario,* August 7 1911.

[218] AGN, Tribunal Superior de Justicia del Distrito Federal (TSJDF), C-118, 2-703.

the car using the counter-current brake, he ran over her. Sixteen-year old Enriqueta was taken to the Juarez Hospital with an injured leg. She later declared that in the heat of the discussion she had threatened her lover with jumping in front of a trolley. Miguel had managed to rescue her from the first trolley that crossed the street, but, unfortunately, she fell under the trolley that was heading in the opposite direction. In a contemporary fiction piece, Pantaleón Cruzador, a baker, demanded an unusual *prueba de amor* from Lupe Rebelador. He asked for her to jump in front an *eléctrico,* which she delivered under the effect of alcohol.

The pen of the great poet Amado Nervo captured another love-related quarrel gone badly. A young couple had enjoyed a long walk for hours around the city center which culminated in a sort of violent quarrel as the young lady rejected the idea of going along for the entire night.[219] The man abandoned his girlfriend's hand and took off running towards the railway at a time when one of the many trolleys that entered the Zócalo via Empedradillo Street was approaching. The motorista rang the bell repeatedly and at the same time noticeably reduced his speed. The young man jumped off the railway and the motorista, seeing his path cleared and impatient to finish his journey since it was almost midnight, began to speed up once again, the young man then violently jumped in front of the car. The skillful driver tried to use the counter-current brake, but it was impossible given the short distance between the car and the individual. One of the front wheels ran over him mutilating one of his arms and cutting the body in half, in such a way, that "if the bust and the legs remained together was only thanks to the clothing." With great difficulty the body was pulled out from under the wheels and taken to the

[219] Nervo, Amado, Gustavo Jiménez Aguirre, Yólotl Cruz, Claudia Canales, José Ricardo Chaves, and Juan Domingo Argüelles. *El libro que la vida no me dejó escribir: una antología general*. (México, D.F.: Fondo de Cultura Económica, 2006), pp. 145-146.

sidewalk. At the light of the lamp post the horror of the scene was made visible and the girl's horrific sobbing broke the silence of the spectacle. Nervo's friend, who had witnessed the scene and related to the poet, believed the young man did not want to commit suicide. He believed the young man was only trying to faithfully represent a ridiculous crude play and his deceitful impulse took him farther than he had planned. Upon hearing his friend's testimony, Nervo responded "what an idiot!." Recognizing that was not a very compassionate thing to say, the poet said it was a natural response and the only funeral prayer that many suicide victims deserved.

The trolley's deadly force was also sought after by individuals driven not by love but to cover up their criminal actions. Gendarme José María Martínez, of the eighth District, worked his last shift on [enter date]. A little past midnight, the gendarme stopped at the intersection of Chapultepec Avenue and Calle Primera of the Juarez Colonia, where he signed the attendance roll. Forty minutes later, Martinez was found badly injured, but still breathing, lying over the railway. A motorista who had departed from the Zócalo for Coyoacán at 1am was able, thanks to an arc lamp that stood very close to where the body laid, to spot from a distance that a *bulto* (bundle) was laying over the rails. The driver addressed the passengers so they could bare witness that the body was already there before the car's arrival. Passengers immediately descended from the car and went on to discover the shaking agonizing body of Martinez over the rails. His head lay over the northbound railway and his right hand firmly pressed against the rail. Given the weird position of the body, it seemed unlikely that he had been ran over in that place since neither his uniform nor cape had been torn. For those and many other details it was suspected that he had to have been murdered or ran down somewhere else and then

dragged to the place where he was found in order to fool the authorities. His body was taken to the medical section of the police station. The body showed several bruised injuries in both legs and an acute injury in the frontal region, it was impossible, however, to tell whether these had been caused by *machacamiento* or by any other means.

It is impossible to determine how many other countless *machacamientos* in reality had hidden darker secrets, as there were some particular railway lines that became known for dismembering unidentified pedestrians under the mantle of the night. The darkness of the night may have indeed contributed to doing away with vestiges of criminal activity, but that was not the case for a woman who tried to use the railway for her own purpose in broad daylight. At the corner of Comonfort and Pensamiento streets, Mr. Manuel Montalvo stood along with other employees of the Pellandial workshop when they noticed a decently dressed young woman carrying a *bulto* under her arm.[220] A few minutes later, as a car of the Don Toribio and Santiago line was approaching at full speed, the woman knelt close to the railway and left the *bulto* over the rails. The prompt reaction of the motorista prevented the car from running over the object. To everyone's surprise, the curious Mr. Montalvo, who had approached the railway to inspect the object left by the young woman, discovered a very young baby wrapped around old clothing. The woman was arrested as she tried to escape.

[220] *El Imparcial*, 3 July 1903, p.1.

Interruptions of the symphony

Verdad es que los tranvías
prosiguen atropellando
a alguno, todos los días,
y a varios, de vez en cuando.[221]

If smooth-paved cement sidewalks, impeccably paved streets with their superb electric streetcars full of passengers formed the concert of modern civilization, then the accidents starred by the *eléctricos* were unwelcomed interruptions of the symphony of modernity. Graphic and gruesome descriptions of these accidents filled newspapers on a daily basis. As claimed by a humorous verse "the streetcars continue to run down individuals. Everyday they run down someone, and every other day, over a handful." Newspaper coverage of accidents provides a plethora of information that allows to piece-together the darker side of modern transportation.

Street accidents were not a byproduct of the arrival of the electric cars to Mexico City. Earlier modes of transportations such as the horse cars, carriages, carts, bicycles, and individuals on horseback had all been actors in bloody street dramas. Increasing industrialization in and around the city had brought rising numbers of accidents to the scope of citizens. Urban fires, for instance, have become both more frequent and more powerful with the introduction of large factories and electrical machinery, as well as the increasing population density.[222] New power sources and the increasing mechanization of industrial procedures inside factories also led to growing numbers of personal accidents. These, however, took place behind closed doors, far from the eyes of the public. Railway accidents, although public in nature, did not take place in a single area, but rather over the

[221] "Perdonen por Dios" in *Actualidades,* 1902, pp. 106-7.

[222] For urban fires see Anna Alexander, "Quotidian catastrophes in the Modern City: Fire Hazards and Risk in México's Capital, 1860-1910," (Ph.D. dissertation, The University of Arizona, 2012).

millions of kilometers that crisscrossed the country's territory. Thereby the destructive consequences of train wrecks came into people's lives via sensational stories in the nation's dailies and seldom experienced directly.

Unlike other accidents brought about by technological advances, electric streetcar accidents in the capital city meant that, because of their regularity and immediacy (by taking place within city limits or immediate suburban areas), residents had a greater possibility of either being directly involved in accidents or being eyewitness to them. It also meant that newspaper reporters had easier access to the scenes of accidents and that their reportage was consequently more vivid. Accident reports included names and descriptions of streets and areas of the city familiar to their readership.

Expectations and anxieties run high ever since plans to electrify the tramways were made public. *El Imparcial* published a lengthy report to welcome the plans in the hope that it would improve the city's current "detestable service" but recognized the potential for problems.[223] It argued that electric cars did not lend themselves to the traditional demands of the city's passengers, but instead would offer themselves to numerous tragedies if the public's traditional *imprudencias* (carelessness) were to continue. Among those traditional habits, the daily complained, was that of calling for the horse car to stop at the passenger's house doorsteps. It was indeed a miracle, the report added, that passengers did not ask to be taken up to their bedrooms and have their boots taken off. A second terrible habit, the newspaper complained, was that of young men dodging the cars, jumping on the platforms, and acrobatically exiting the cars when they were still in motion. The daily imagined that the continuation of all of these habits were

[223] *El Imparcial*, 3 October 1899, p.1.

to have terrible consequences given the speed at which eléctricos would travel at. The report added that surely arguments were going to be made for the reduction of their speed in order to reduce the risks, if that was the case; it was not worth the trouble to introduce electricity. The report concluded that it was in the public's interest, as much as that of the company, to make their own trials with electricity for the sake of their own survival.

El Universal also celebrated the plans arguing that with it the citizens of the capital were taking another step in the path of civilization.[224] They foresaw, nonetheless, that soon the press was going to cover the thousands of accidents that were going to take place. It claimed that someone had already stated that civilization has cost and will continue to cost many *pellejos* (lives), thereby, it warned its readership if they did not want to be a victim of civilization, a very sad thing indeed, they were to *¡Háganse a un lado!* (Step aside!).

These early accounts about the coming of the streetcars reveal a number of particular insights into the perspectives on accidents that would be later emphasized in accident reportage. The reports of both *El Imparcial* and *El Universal* interpreted the new means of traction as positive for the city's development. Electric streetcars were celebrated not only as improved means of transportation in the city, but also as symbols that were to take the city forward in its path of civilization. In other words, to electrify the trams was to civilize them. Secondly, the potential for accidents had not only been acknowledged since early on, but it had been interpreted as part of the cost for modern means of transportation. The potential of accidents was discussed not as a shortcoming of the technology, but rather as a clash of the technology with its new physical context. In

[224] *El Universal*, 16 January 1900, p.1

other words, before the first accident had even occurred, accidents were rationalized as the result of the poor habits of the city's residents. This early interpretation established an important precedent as it set the stage for reporting and analyzing future tram accidents as tragic failures to reform personal habits that no longer belong on the country's modern streets. The habits developed in years of horse car service were deemed incompatible with modern electric traction. The prevention of accidents was placed on citizens themselves. *El Imparcial* asked citizens to do their own trials with electricity for the sake of their lives, while *El Universal* went further claiming that lost lives was the price to be paid for the improved means of transportation, but that ultimately it was up to individuals to save their *pellejos*.

The introduction of electric traction, however, did not only introduce faster speeds of travel, but in the company's effort to regulate the movement of cars and the habits of passengers in and out of the cars were constantly challenged. Habits developed in the forty-four years of horse car ridership did not go quietly into the night. Under the 1877 horse car regulations, for instance, drivers were obliged to stop the car for passengers to board and exit the cars and were not to allow them to do so while the car was in motion. The regulations did not delineate official stops and instead, horse cars made stops in the middle of the street or wherever they wanted to. A magazine article which compared the service of horse cars to the electric streetcars noted that "when the *tranvías de mulitas* passed in front of their houses, Mexico City residents would just come out to their balconies and ask them to wait for them. Passengers already in the cars had to patiently wait until the new passenger got on and the car got moving again."

The establishment of regular stops for electric streetcars became a subject of

controversy. Although Garcia, the representative of the Argentine government, had admired the city's trolley service in 1909, he had also recognized that upon arriving to the city he was never able to have the *motoristas* tell him the stops where he should get off.[225] There were only a few of them, he added, who actually knew the city and the foreigner who is not familiar with the route they had taken were sure to get lost. Stops themselves indeed had become a controversial issue. During the first couple of years passengers continuously complained of the fact that *motoristas* only stop at their own will. *El Alacrán,* a festive newspaper, commented on the issue in one of their cartoons. An elegantly dressed full-bearded gentleman wearing a top hat with cane in hand stands on the edge of a sidewalk and says "I'm going to see if my orders are followed," and yells out to a passing trolley, "*¡Eh! ¡Pare, Pare!* (Hey! stop, stop!).[226] The motorista responds, "We can't stop in the middle of the streets." The gentleman turns around and says to himself "that's right, I forgot that precisely I ordered that myself. Let's go to the corner." Once there he yells "*¡Eh! ¡Pare, Pare!"* and he is answered, "We can't stop at the curves." The gentleman turns around irritated and says "¡Caramba! I also forgot that I ordered that myself. Let's go to the other corner where there is no curve." He arrives and yells to the driver "Now I got it right. *¡Eh! ¡Pare, Pare!"* to which the driver responds, "We can't stop at switching points." The frustrated gentleman turns around and says "¡Canastos! I think that was also one of my orders." The gentleman finally arrives to the next corner and says, "I think this is it, *eh! ¡Pare, Pare!"* and the motorista replies "we can't stop at intersections." The gentleman turns around and standing with both hands

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[225] García. *Memorias íntimas,* p. 57.

[226] *El Alacrán,* 31 March 1900.

over his cane and with a very pondering expression says "¡que ca….sualidad!. [227](What a coincidence)! I think I have yet to remind myself to order where they should stop.

Fig. 9 Cartoon satirizes the popular belief that streetcars never stop
Source: *El Alacrán,* 31 March 1900.

The electric streetcar regulations established under the general precautions section that cars would only stop to take or leave passengers at the points designated by the company.[228] There was general disagreement among the public about the desirability of those designated places. Complaining of the poor organization of the eléctricos, *El País* argued that it was very difficult to have them stop as although they were not to stop at the middle of the streets or on the curves, many times they would not even stop at the corners. Several people, it added, had approached their editorial office to make their voices heard and to have something done about it. Mr. Jose M. Zevada Baldenebro, representative of the Banco Occidente de Méjico, told them that the day before he had

[227] Pausing in the middle of the word is a mechanism use to hint to the fact that the speaker indeed wanted to swear. In this case of "ca…sualidad," it could be that the individual wanted to say "carajo," (damn it).

[228] *Diario Oficial* –Reglamento para los Ferrocarriles Eléctricos, February 24 1900.

tried to stop three or four wagons without success.[229] He was then oblige to take step unto the last one while it was still in motion risking an injure, which he eventually did receive. He had been another victim of the disregard of the drivers for the public. The same was happening with the *eléctricos,* which case was even worst given their excessive speed.

Challenges to the regulated stops were a common source of conflicts and oftentimes had terrible consequences. On August 8 1902, for instance, an individual aboard the first class car of a Tacuba trolley asked the driver to make a stop. As the driver did not respond to his request, the passenger tried to get off while the car was still in motion. He did not make it to the ground. Instead, he was thrown under the wheels of the second-class trailer. The trolley stopped and everyone aboard turned gazed with terror toward the place were the victim had fallen. To everyone's surprise, the man walked out with only minor scratches and his clothing torn. Francisco Amezcua was another passenger who decided to get off after the driver refused to stop in front of his house as he had requested it. He lost balance as he tried to descend and fell to the ground suffering several injuries. Amezcua felt the driver was at fault and filed a complaint at the police station.[230] Another gentleman, who requested a stop at the corner of Cinco de Mayo, was told that that was not a stop as it was a dead-end street, and that the next stop was on Plateros street. Commenting on this case, *El Imparcial* noted that it was nonsense for drivers to argue that corners of dead-end streets were not streets, and that given that drivers had no common sense, passengers had to walk an additional street under the rain.

Passengers could suffer a misfortune in their attempt to board streetcars, on their transit as seated passengers, or when exiting the car. Boarding and exiting cars while in

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[229] *El País,* 31 March 1900.

[230] *El Diario,* January 13 1911.

motion was not a novelty of electric streetcars, but the consequences of doing so were exacerbated with faster travel. Women, children and elderly passengers were particularly at risk when boarding streetcars given the fact that it usually took them longer to get on. On October 27 1900, for instance, María Peña tried to board a streetcar in Alvarado Street, but the driver took off before she placed her second foot on the running board.[231] María fell to the ground, but since her dress got tangled with the car's side ironwork, she was dragged for five meters before the car came to a full stop. She received several injuries and her dress was shredded to pieces. Merely two months since electric traction had been inaugurated, *El País* claimed that eléctricos inspire a real terror, especially among women, because given the short stops they made, many times women could not board or exit *con comodidad* (comfortably).[232] Long, wide skirts and dresses, made it difficult for women to get on or off easily; it was harder when the tram was in motion.

Boarding or exiting the cars before they came to a full stop was another common source of accidents. One of those cases was that of artillery sergeant J. Reyes Ortiz who attempted to board a second-class trailer while in motion.[233] In his failed attempt, the sergeant fell backwards and his head stroke against a big stone on the right side of the track, dying on the spot. According to *The Mexican* Herald's report on the fatal accident, the sergeant had made the mistake people who were unfamiliar with trams were in the habit miscalculating the speed of the cars. In contrast to the tugging of the galloping mule, the trams run so smoothly and, with such apparent absence of effort or expenditure of energy in any form, the daily described that pedestrians imagined that the cars were

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[231] *El País*, October 27 1900.

[232] *El País,* March 31 1900.

[233] *The Mexican Herald*, 4 March 1900.

not moving so very fast after all. Such mistake, the daily went on to state, persists until they tried to board the moving train and discover they have made an error.

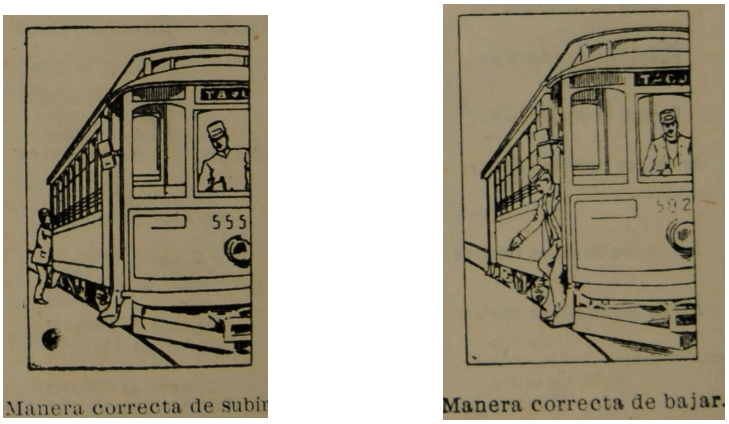

Fig. 10 Illustrations showing the correct way to board and exit streetcars
Source*: Tranvías Eléctricos de Mexico, Guía de Pasajeros a bordo de los tranvías* (D.F., México: Imprenta del Gobierno Federal, 1913).

The miscalculation of speed by passengers and pedestrians was indeed repeatedly cited as one of the explanations for accidents. The report by *The Mexican Herald* points out an acute effect electric traction had on the physical public behavior of city residents. Horse cars had circulated Mexico City since 1856 when a private line was put in place from México to Tacubaya.[234] For the next forty-four years residents became accustomed to the soundscape of the city streets with the "rolling of cars, the heaving of wagons, the resonant trot of horses and mules, and the hoarse and strident sound from the cornet of the horse cars."[235]

The circulation of horse cars had been regulated by the 1877 Federal District Urban Railways regulations. Article fourth established that within town limits, no car

[234] Manuel Vidrio C., "Sistemas de transporte y expansión urbana: los tranvías," in Alejandra Moreno Toscano, Coord., *Ciudad de México: Ensayo de Construcción de una Historia*. (D.F. México, Instituto Nacional de Antropología e Historia, 1978), p. 202.

[235] Porfirio Parra, *Pacotillas* (Barcelona, España, Tipolitografía de Salvat é Hijo, 1900), p. 17.

should run at a speed greater than that achieved by the trot of draft animals.[236] Draft animals were also required to carry a collar with rattles or bells that could be heard from a good distance in order to avoid any danger.[237] The regulations underscore that coachmen and drivers should take great care to avoid collisions against other vehicles or pedestrians, particularly children, and thereby were to always carry a small whistle to be used both to signal danger and announce the arrival of horse cars at the intersections and side streets. Article ninth established that drivers were obliged to always help the elderly, disabled, unaccompanied ladies and children to board and exit the cars. Jasper T. Moses nostalgically lamented the disappearing mule cars that in yesteryear had graced the streets of most Mexican cities.[238] Moses recalled the polite character of drivers who would wait for the passenger to walk (not run) a block or more so that they would not need to wait for the next car, whose arrival time was unknown. They recalled how assisted ladies from the car, carried their market baskets to the door, and bided them farewell with a sweeping bow and wave of their cap. Whether or not article ninth was religiously followed, such courtesy was no longer included in the regulations established for electric streetcars.

Many other passengers who did wait for the electric streetcars to come to a halt, were also injured as cars took off before either passengers had stepped off the running board or having descended from the cars were still too close to the cars when cars took off. In many of those cases passengers were thrown either besides the railway suffering minor injuries or more serious ones when thrown under the wheels of the second-class

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[236] AGN, SCOP 3/214-1, 1877.

[237] Ibid,

[238] Jasper T. Moses, *Today in the land of tomorrow: sketches of life in México*, 2nd ed. (Indianapolis, IN: The Christian Woman's Board of Missions, 1909), pp. 26-27.

trailer. A humorous verse made reference of these types of accidents commenting that everyone who rode in the first class motorcars let their houses go by and waited until they reach the Plaza[239] to get off.[240] There were others, especially young men, who developed a habit of jumping off the trains to show off they were indeed experienced riders. Telegraph mailmen and messengers got off the trolleys when they were still in motion, and they did it with such an elegant manner as to demonstrate their ability.[241] This style became known as "*bajarse de angelito*" (angel's exit). It consisted of jumping off when the trolley was still in motion, inclining the body and then turning towards the end of the trolley. It was a difficult move that only those who had a lot of experience could execute without suffering injuries. There were many angels, however, who lost their elegance and came crashing to the ground.[242] Catching a free ride on the trolley was another popular habit among young men. To travel "de mosca" was also a risky enterprise. Ricardo González jumped on a hearse trolley and although the driver noticed it, he could not attend to it. The motorista asked González whether he was a dead man to be travelling in the hearse car. González having been caught tried to jump off, but instead rolled over under the second-class car, which ran over his foot shredding it completely.

Passengers could also incur injuries during the trajectory of the trip. Unlike passengers in railway accidents, which many times were not directly injured or did not even noticed that an accident had taken place, passengers in electric streetcars both directly felt and saw accidents before, during and after they occurred. In many cases

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[239] Referring to the Plaza de la Constitución where most of the lines converged.

[240] "Industria Nueva," *El Cómico,* 8 April 1900.

[241] *El Imparcial,* 14 May 1903.

[242] The habit was still practice by young men and children during the 1920s.

involving pedestrians, horse cars, coaches, or cars, drivers managed to violently stopped trolleys in an effort to avoid or lessen the eminent accident. In those cases passengers were usually thrown against each other, off their seats or against windows. Passengers were also eyewitnesses to horrific scenes. Passengers of a trolley traveling down Chapultepec Avenue on March 7 1900, for instance, felt a jump as the trolley ran over the body of Eugenio Ramirez.[243] A humorous verse commented that although *señoras* would murmur halleluiah once they got to their seats, the roadway was carpeted with knees and heads.[244] A similar scene was cleverly illustrated in an image of a group of six individuals with their heads sticking out from under the wheels of trolley. The caption read, "This will be the decorative baseboard for the grand salon where the board of directors of the METC meets."[245]

Friso decorativo que ha de ponerse al gran salón donde celebran Consejo los miembros de la Junta Directiva de la Compañía de los Ferrocarriles del Distrito.

Fig. 11: Illustration for the METC board of directors' conference room
Source: *El Cómico*, 21 July 1901.

Passengers saw and felt how eléctricos ran over pedestrians, animals, mothers with babies in their arms, children, the elderly, and the unfortunate passengers that fell in their way in or out of the cars. There were other accidents, however, which threatened the passengers' own lives. Among these were derailments and crashes against automobiles,

[243] *El País,* 7 March 1900.

[244] "Industria Nueva," *El Cómico* 8 April 1900.

[245] *El Cómico*, 21 July 1901.

horse cars and railways. On March 10 1900, there was an accident between a cargo train of the Hidalgo Railway and trolley # 7. Seconds before the collision, passengers aware of what was about to happen entered a state of panic and tried to jump off the windows, but they didn't have enough time and resigned themselves to suffer the consequences. The poem entitled *Until When?* held that the passengers know well that is very possible that their trip might end at the cemetery, and warned that if crashes and derailments did not decrease, they should receive the holy sacraments before their travels.[246]

Whether or not one welcomed the arrival of the electric streetcar, and regardless of whether one rode them, venturing unto the streets required a change in behavior that recognized their presence. Walking and crossing streets were ordinary actions that needed to be modified. The elderly and children were particularly at a disadvantage. The elderly felt threatened by the new machines travelling at speeds never seen before. On February 2nd 1902, for example, an elderly woman, who could hardly walk, was crossing a street across the Cartajena Plaza at the time when Motor 119 was taking off. She received such an impression when she saw the trolley that she fell on the street and her dress got tangled up in a piece of iron of the trolley, which dragged her for a good distance. She only suffered an injury in her forehead and bruises in the body.[247] Other elders, however, were not so lucky. Alejandro Vilches, for instance, was crossing the corner at Constancia and Peralvillo, fell on the ground and was run over by a trolley of the Guadalupe line. As he fell over the rails, the wheels of the convoy crushed both of his feet.

Elders with hearing problems were particularly at risk of being involved in trolley accidents. Trolleys travelled at a considerable greater speed than horse cars, and thereby,

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[246] "¿Hasta cuándo? *Actualidades* 1902, pp. 78-79.

[247] *El Imparcial,* 2 February 1902.

depending on the skill of the driver, and sometimes his mood, the state of the railway and the braking system itself, stopping at the sight of people on the railway was not guaranteed. One of the general precautionary measures of the trolley regulations stated that drivers were to reduce their speed when approaching intersections in order to avoid crashes or any other accidents. They were also to ring a bell to announce a car was approaching. Reducing the speed and ringing the bell were also to be executed whenever an obstacle was discovered on the railway, and if the obstacle could not be removed, the car was to be halted. This was to be followed specially when there was the risk to run over a pedestrian. Margarita Perez, who was deaf, was run over on Zarco Street by a trolley of the Martinez de la Torre line. She didn't hear the motorman's warning calls and she was *machacada* (crushed) by the trolley's wheels suffering a head injury and bruises throughout the body. The motorman was arrested and brought before the authorities as he was said to be partially responsible for the accident, as he didn't stop the trolley given that the elderly woman didn't turn her head when he made the signals. In another case, a half-deaf 70-year old man confidently began to cross the corner of Amargura and Santo Domingo, and didn't hear or see an approaching trolley.[248] The man disappeared under the wheels of the trolley and reappeared a few meters away with the stomach frightfully opened and the head completely destroyed. The body remained on the tracks for some time attracting a large crowd of curious individuals.

Children on the other hand were attracted by the novelty of the trolley. Child Adrian Gallegos, for instance, playfully tried to get on a trolley, but slipped and fell to the ground. The wheels run over his right foot, which probably had to be amputated.[249]

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[248] *El Imparcial*, August 19 1905.

Another 8-year old that tried to jump on a trolley hearse, was not so fortunate. The boy slipped and fell under the wheels, which ran over his neck and legs. He died instantly. His legs were left almost amputated and the neck was completely separated from the trunk.[250] Nine-year old Faustino Ramirez, sent by his father to run an errand, got distracted on his way to the store and began to play on the street. He then tried to cross the street before a trolley, and was run over and horribly *triturado* (grinded). The traffic was halted for some time, as several jacks were needed to pull out the body.[251] On her way home from school, Maria Castillo was playfully running on the street while holding the hand of a servant.[252] She managed to get away from the servant and ran as fast as she could, but at the intersection, a trolley ran her over. Her body disappeared under the car. Throbbing fragments of her body got tangled up on the car's ironwork. Her family was immediately notified and the devastated mother painfully tried to put her daughter's body back together. Some of the most horrific accidents, however, involved mothers with children in arms. One of those accidents took place on July 31st 1901. A note titled "Hecatomb by an electric: A woman and a girl crushed," described the story of a trolley, which after running over a donkey and derailing, went on to run over a woman with an infant in arms.[253] The first car torn the infant and the woman's legs to pieces; the second car ended the woman's life.

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[249] *El País,* February 14 1900.

[250] *El Imparcial*, April 1 1901.

[251] *El Imparcial,* November 20, 1902.

[252] *El Imparcial*, September 13 1901.

[253] *El Imparcial,* August 1 1901.

Indigenous living in the outskirts of the city also fell victim of the trolleys. Francisco de Jesus, a fervent devout of the Virgen del Tepeyac, was run over on his way to pay his *manda* (promise).[254] Francisco died instantly and when the body was found he was still holding on to a wax candle and a painting of the Virgin on either hand. A trolley of the Tacubaya line also instantly killed Refugio Perez. Perez's head was separated from the body and rolled down besides the railway. Many others faced similar faiths but remained unidentified as their bodies were crushed beyond recognition. Indeed, most of the time they were claimed to belong to the indigenous or poor classes because all that was left of them were strips of their clothing attached to the wheels.

Unfortunate pedestrians were not the only ones who fell between the tracks. Donkeys, sheep, mules, horses and cows were also among the victims. Driver Mariano Salcedo in a chain of continuous accidents ran over a pedestrian, then was about to collide with a car and finally when approaching the Villa de Guadalupe came upon a group of donkeys across the railway. One donkey was killed and the other two were injured. Canuto Cruz, the owner, demanded 60 pesos for the dead donkey and 10 pesos for the merchandise he had lost in the accident. In a similar case, Don Miguel Sobrino took the METC to court after a trolley injured one of his mules. He demanded the payment of 50 pesos for the mule's treatment, which unfortunately, was left useless for service.[255] Running over animals became such a commonplace that they provided material for jokes. In one of these a driver tells a peasant that he is really sorry for running over his chicken and offers to pay one peso in compensation. The *campesino*

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[254] *El Imparcial*, December 13 1903.

[255] AGN, Tribunal Superior de Justicia del Distrito Federal, Siglo XX, Caja 545, 95393, 1906.

replies let's make it two pesos because "I have a rooster at home that loved this chicken so much and the shock of her death can kill him too."

Within days from the introduction of electric traction in the city, scenes of *machucados* and of those that lost their *pellejos* began to pile up and invade the capital's newspapers. Verbs such as *achicharrar* (scorch), *amputar* (amputate), *arrastrar* (drag), *arrollar* (crush), *atropellar* (trample), *carbonizar* (to be charred), *chamuscar* (burn), *chocar* (crash), *decapitar* (decapitate), *triturar* (grind), *degollar (*cut somebody's throat), *derribar* (knock down), *descarrilar* (derail), *destruir* (smash), *electrocutar* (electrocute), *fulminar* (strike down), *fracturar* (fracture), *hacer añicos/pedazos* (shatter), *incrustar* (embed), *lanzar* (launch), *lesionar* (injure), *machacar* (*crush),* and *mutilar* (mutilate), among others, became stock descriptors that helped newspaper writers capture and relate the minute details of bloody street dramas. Oftentimes sensationalist accident headlines were meant to convey the daily human toll residents were paying for the introduction of the new technology. "Bloodbath by an *eléctrico*: a woman and a baby crushed,"[256] "Painful scene: elder man with no feet,"[257] "Another decapitated individual in Chapultepec: which trolley killed him?,"[258] "Horrible spectacle: two trolley cars over a woman's body,"[259] "Decapitated by an *eléctrico*: instant death, unidentified body," and "New victims of the Trolley-guillotines,"[260] illustrated both the horrific scenes and the human cost. Many paid with their lives ("Child killed by a double-deck trolley," "horrible

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[256] *El Imparcial,* 1 August 1901.

[257] *El Imparcial,* 16 January 1901.

[258] *El País*, 4 January 1904.

[259] *El Imparcial,* 22 September 1901.

[260] *El País,* 4 March 1916, p. 2.

death," "homeless killed by a trolley," "tragic death of a soldier," "child torn into pieces," "smashed by an *eléctrico*") and many others with their limbs, ("Injured lady with amputated leg," "Elder man with no feet," "ran-over linesman carries his own arm").

Limbs and Lives in numbers

A report published in early 1901 revealed that railway accidents registered in the country's capital had increased in the previous year. The recently introduced electric streetcars were said to have caused most of them. Based on the statistics compiled by the Federal District's courts, there had been 283 railway accidents in 1900, eighty per cent of which involved eléctricos (about 226).[261] The report did not a breakdown of the type of injuries incurred during these accidents, but it did claim that almost half of the victims had died as a result (about 100). There is the possibility that the number of individuals involved in accidents in the first year of electric traction might indeed be higher. Dr. Manuel S. Soriano, for instance, six months after the inauguration of the *eléctricos*, claimed that on a daily basis city residents saw the accidents, the derailments, the *machucados*, and the disabled ones that could be counted in the hundreds.[262] The number of the individuals who suffered injuries and who died in the aftermath of streetcar accidents might also be higher, as the statistic provided by the District's courts only accounted for those who died at the scene of the accidents, and those who reported their injuries, leaving aside those who might have been rescued from the accident alive but later died from their injuries. It was common for individuals who had suffered injuries in an accident to simply walk away from them. For instance, on Sunday night of May 3,

[261] "Los accidentes ferroviarios en el año de 1900, los juzgados federales," *El Imparcial*.

[262] *Gaceta Médica de México,* Vol. 37 (Sept., 1900), p.334

1903, motorcar #302, was taking passengers from their day in the country back to the city, when the driver identified a man on horseback who was travelling really close to railway.[263] The driver blew his whistle to announce its proximity, frightening the horse, which rushed to cross the railway, but was ultimately, ran down by the trolley. Andrés García, the owner of the horse, was "miraculously" saved from dying under the wheels, but the horse suffered several injuries. In the meantime, the trolley remained stopped over the rails with no lights on. Travelling towards them was special trolley #10 which was taking D. Anselmo Spitalier and his family and servants from San Ángel back to the city. Francisco Sanchez, the driver, tried to brake to avoid the eminent accident, the collision was catastrophic. The special train inserted itself inside motorcar 302. Although only two injured passengers arrived to hospital, it was believed there had been more injured passengers but they had hesitated to reveal their injuries to avoid falling in the hands of the authorities and waste time until they were allowed to go home to treat them.

Dr. Orvañanos published an essay in early 1905 in the gazette of the National Academy of Medicine entitled "Relating to some accidents caused by the electric streetcars." He argued that every year the number of electric streetcar accidents was above six hundred and that neither tuberculosis nor yellow fever caused such mortality rate.[264] Official data on injuries and fatalities in railway accidents for the period of 1904-1906 provide a more conservative number. The total number personal injuries for those

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[263] "La Catástrofe de antier: un moribundo, entrevista con los empleados, siempre los eléctricos," *El Imparcial*, 7 May 1903.

[264] "Higiéne Pública: De algunos accidentes causados por los tranvías eléctricos," *Gaceta Medica de México*, Tomo V, 2a Serie, Núm. 1, 1o de Enero de 1905 (México: Tipografía y Litografía de Juan Aguilar Vera y Compañía, S en C., 1905), pp. 12-14.

years were 371, 411, and 434 respectively.[265] Out of those 314, 354 and 366 incurred only injuries, while 57, 57, and 68 lost their lives respectively. The latter figure, however, does not account for those individuals who died from their injuries either at the hospitals or at their homes. The following graph illustrates how electric streetcar accidents compared to three of the major railroad lines in the country in terms of injuries and fatalities. Accidents involving streetcars closely resemble those that took place on the lines of the Mexican Central. It is important to note that accidents on the latter did not take place in a single area, but rather were dotted over the five million kilometers the company had in operation. Streetcar accidents, on the other hand, took place along the two hundred and forty plus kilometers the company operated in Mexico City alone. Thereby, nowhere else in the country does the statement that railway accidents in Mexico "introduced an unprecedented form of carnage into everyday life" take a greater dimension than in Mexico City.[266] The daily occurrence and reportage of streetcar accidents provided Khit with plenty of material to work with. His poem titled *It is well known!* he wistfully said: Hot news?, well, the daily one! The bad, the unbearable trolley service! Let's not talk anymore about accidents because that is to talk about the ocean and its re-count would be a never-ending *cuento* (count/story). It is enough to say that in different routes and itineraries two or three corpses are picked up daily from the rails.[267]

The official figures provide an illustrative breakdown of the individuals involved in the accidents: passengers, employees or unrelated to the service or operation of the

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[265] From *Reseña Histórica y Estadística de los Ferrocarriles de Jurisdicción Federal* (DF, México: Topografía de la Dirección General de Telégrafos Federales, 1907).

[266] Matthews, "Railway Culture."

[267] "Ya se conoce!" *Actualidades* 1902 pp. 63-54.

railways. In the period under analysis (1904-1906), the percentage of individuals who incurred injuries in streetcar accidents who had no relation whatsoever to the operation or service was sixty-two, sixty-one and fifty-five correspondingly. That is over half of the people injured in streetcar accidents. The percentage of individuals, who lost their lives, although they were unrelated to the service or operation, is even more shocking. In those three years, the percentage was over eighty percent (91.2, 80.7, and 80.8 percent respectively). Meaning that four out of every five individuals who died on these accidents were pedestrians or bystanders.

Table 3: Injuries and fatalities in railway accidents

Injuries and fatalities in railway accidents[1]																
				Injured					Deaths							
Year	Railway Company	Km. in operation	Total no. of passengers in all lines	Passengers	Company and government employees	Persons unrelated to the tramway's service and operation	Total number of injured individuals	ratio of injured passengers to the total number of passengers	Passengers	Company and government employees	Persons unrelated to the tramway's service and operation	Total number of fatalities	ratio of fatalities to the total number of passengers	Total number of personal injuries	Ratio of personal injuries to the total number of passengers	Ratio of personal injuries of passengers to the total number of passengers	Ratio of number of accidents in general to the kilometers in operation
1904	Tranvías Eléctricos de México	241.006	42,602,194	63	55	196	314	1:676,225	2	3	52	57	1:21,301,097	371	1:114,831	1:655,418	1: o.650
	Interoceánico and all its lines	1,062,164	1,141,655	3	84	26	113	1:380,551	.....	20	13	33	.....	146	1:7,819	1:380,551	1: 7,276
	Nacional de México	2,448,252	1,325,847	14	106	55	175	1:94,703	2	14	18	34	1:662,923	209	1:6,343	1:82,864	1: 11,714
	Central and its lines	5,055,422	2,941,998	60	174	86	320	1:49,033	13	34	48	95	1:226,307	415	1: 226,307	1:40,301	1: 12,182
1905	Tranvías Eléctricos de Mexico	241.54	47,757,440	88	48	218	354	1:542,698	5	6	46	57	1:9,551,488	411	1:116,198	1:513,520	1: 0,588
	Interoceánico and all its lines	1,020,693	1.481,743	25	63	24	112	1:59,269	2	17	18	37	1:740,871	149	1:9,810	1:54,879	1: 6,850
	Nacional de México	2,527,344	1,885,069	31	95	45	171	1:60,808	3	22	26	51	1:628,356	222	1:8,491	1:55,443	1: 11,384
	Central and its lines	5,056,028	3,371,281	70	198	92	360	1:48,161	14	33	57	104	1:240,805	464	1:7,266	1:40,134	1: 10,897
1906	Tranvías Eléctricos de México	249.986	54,562,725	123	40	203	366	1:443,599	6	7	55	68	1:9,093,787	434	1:125,720	1:422,966	1: 5,076
	Interoceánico and all its lines	1,188,664	1,483,629	6	67	22	95	1:247,271	.....	15	9	24	.....	119	1:12,467	1:247,271	1: 9,987
	Nacional de México	2,527,344	1,782,802	20	101	34	155	1:89,140	2	17	29	48	1:891,401	203	1:8,782	1:81,036	1: 12,449
	Central and its lines	5,134,728	3,806,536	38	247	79	364	1"100,172	2	34	118	154	1:1,903,268	518	1:7,348	1:95,163	1: 9,912

[1] Source: Put together by author based on data from *Reseña Histórica y Estadística de los Ferrocarriles de Jurisdicción Federal* (DF, México: Topografía de la Dirección General de Telégrafos Federales, 1907).

Source: *Reseña Histórica y Estadística de los Ferrocarriles de Jurisdicción Federal* (DF, México: Topografía de la Dirección General de Telégrafos Federales, 1907).

These figures are more eye opening when compared to the percentage of passengers and employees involved in these accidents. The percentage of passengers who suffered injuries (20%, 25%, 33%) exceeded those of employees (17%, 13%, 10%) every year. Indeed, it was almost doubled that number in 1905 and 1906. The combined percentage of individuals who lost their lives and were directly related to the service (passengers - 3.5%, 8.7%, 8.8%) and operation (employees - 5.2%, 10.5%, 10.2) of streetcars stood at ten percent in 1904 and about twenty percent in 1905 and 1906.

Taking fact that pedestrians made up the majority of individuals whose bodies suffered the terrible consequences of streetcar accidents, Khit made reference to it in his poem titled "Barley on the tail of the dead donkey!." The poem read: For the one-thousand time the trolleys run down more and better, whoever has the misfortune to be within a league from a motorcar. Is it that cars carry a magnet in their doorsteps to attract the mortal to make minced meat out of them under their wheels in the fatal hour? Is it that we are idiots here and we want to exist no more for the sad pleasure that no one recognizes us after dying? I don't know….! but there is no epidemic nor could I think of any infection that takes the lives that trolleys of this city take. Without counting the one-armed ones, the crippled, the one-legged ones we now see, and who owed their missing extremities, to their terrible encounter with a train."[268] A merely couple months from the inauguration of the streetcars, *El Cómico* had published a poem titled "New Industry," which spoke about the limbs individuals were losing in streetcar accidents. It said the eléctricos were flying as a flock of devils "Oh ill-fated wagons, that with their funeral march go on killing boors, for such applauded reason, those the break bones ask for

[268] "Al asno muerto, la cebada al rabo," *Actualidades* 1902, pp. 49-50.

indemnification. A thousand pesos for a foot, a million for a leg."[269] The poem then went on to sarcastically argue that the public should not pessimist because death was not a stilt-walker, the optimists would soon see that although they are crippled, or one-armed, they will be capitalists. There will be no one asking to put an end to the industry that today emerges as a gift, that of wooden legs!

The accident

On the night of the 24th of November 1902, an unidentified man crossed Portacoeli Street at the time when an eléctrico from the Coyoacán line was heading back to the Zócalo.[270] Félix García, driver of motorcar 52, had made the regular stop at Portacoeli and as he set the car back in motion, noticed a man trying to cross the railways. García rang the bell and blew the whistle to alert the individual but to no avail. As a last resort he tried to close the speed controller handle and counter-current braking. The man first received a blow in his chest as he met the car's platform (E) and then fell backwards over the rails. His entire body was wrapped over the rails.

[269] "Industria Nueva," *El Cómico*, 8 April 1900.

[270] *El Imparcial*, 25 November 1902;¡Horrible espectáculo!, *La Patria*, 26 November 1902.

BIBLIOTECA NACIONAL
MEXICO.

Fig. 12 Descriptive map of a streetcar
Source: Rafael Tejada Portuondo, *Guia del Motorista*.
(Mexico: Herrero Hermanos Editores, 1903).

The accident was reported by *El Imparcial* under the title "Horrible spectacle at Portacoeli: 45 minutes between the trucks of an electric motorcar. Mayhem, clubs and stone-throwing." The everyday occurrence of trolley accidents as well as the sensationalist reportage of them exacerbated the technology's ill reputation. Headlines such as the one above expressed both their reoccurrence as well as the public's frustration: "Another victim of the electric railways," "Always the *eléctricos*," "*¿hasta cuándo*? Headlines, in particular, help to illustrate the terms in which these accidents were debated. They sought to provide the public's response to the scenes of accidents. "Bloodbath by an *eléctrico,*" "Painful scene," "Horrible spectacle," "Horrible catastrophe," "Terrific crash," "Panic aboard a train," were the type of catchy headlines that were meant to quickly and briefly reach out and grab the attention of the reading public. These adjectives conveyed both the magnitude of the accident itself as well as the public's reaction to it.

The public nature of accidents themselves made people from all walks of life into witnesses of these spectacles of modernity. On the Portacoeli street accident, for instance, people quickly began to gather around the trolley car and at one point; it was believed that there had been over 2,000 people on Portacoeli and surrounding streets.[271] Indeed, the congregation of bystanders in the aftermath of accidents had become part of these everyday scenes. In the novel *La Llaga,* Federico Gamboa included the scene of the collision of an eléctrico. Gendarmes arrived, along with rogues from the street causing trouble, a mass of pedestrians and idle individuals who shared impressions of the event, it seemed as if those people "did not get tired of staring at it."[272] Officers and gendarmes from the IV District fought the crowd on Portacoeli Street in their effort to have them clear the area where the man was laying under the wheels of the car. They began throwing stones at the gendarmes and one of them broke one of their lanterns, which was immediately answered by the swinging clubs of the gendarmes.

Don Felipe González, secretary of the IV District, arrived promptly along with "the competent personnel" to remove the body. Regardless, the unidentified man remained for forty-five minutes pressed against the rails since the jacks the group had brought along to lift the car had been too small for the job. It was eventually decided to have the car backed off to pull out the body that had been ripped apart. The body was finally picked up and placed on a stretcher to be taken to the Hospital Juárez. In the case of non-fatal accidents, it was common for individuals to either avoid being taken to hospitals for treatment or to leave the hospital as soon as they could to go home to have their loved ones care for them. In the accident scene penned down by Gamboa, the coach

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[271] Ibid.

[272] Federico Gamboa, *La Llaga*, (México: E. Gómez de la Puente, Ed., 1912), p. 371.

led by Eulalio, the novel's main character, crashed against a car and an eléctrico. He laid on the pavement unconscious next to the Quaker, one of the coach's horses. Once on the stretcher it was ordered to have him taken to the hospital. Nieves, Eulalio's lover, made her way through the crowd that encircled the tram and in a determined tone yelled "No, not the hospital! The wounded has a home, he has me!" She lied and said Eulalio was his brother, as she felt he was closer to death than to her now and could not resign herself to let him die without caring after him for the last time.[273]

Doctors and their testimony on streetcar accidents from their medical perspective provide an excellent window into their grave consequences. Dr. Dr. Manuel S. Soriano and Dr. Orvañanos, in the previous section, for instance, challenged the numbers of individuals who either lost their lives or limbs provided by official sources. Being called to care after the *machucados*, they developed a unique awareness of their recurrence and consequences. In May 1906, Dr. Nuñez addressed the Mexican National Academy of Medicine to present his latest work entitled "Crush injuries." Railways, he posed, had brought about accidents that produced crush injuries, which had been previously almost unknown, or at least very rare, and were now very frequent.[274] In most cases leaving the victims crippled, when their injuries they received are not incompatibles with life and these are conveniently dealt with. He argued that tramways were the ones that most frequently caused crush injuries, and the gravest ones, given that in the most of the cases they either caused the death of the individuals or one or two lower-level extremities have to be amputated. In the latter case, injuries to the feet were the most common. To the

[273] Ibid, 372.

[274] Dr. Nuñez, "Heridas por machucamiento," *Gaceta Médica*, Vol. I, 3rd Series, No. 12 (Dic. 1, 1906) (México: Tip. y Lit. La Europea de J. Aguilar Vera y Compañia, S en C., 1906), pp. 546-553.

contrary, industrial machinery most of the time caused injuries to upper-level extremities crushing one or several fingers, or the entire hand, or even up to the forearm or the arm. Grinders for *nixtamal* (boiled maize) were the most frequent cause of those injuries. Dr. Nuñez claimed that animal traction cars rarely caused crush injuries, and if they do, he added were generally on the feet when a wheel passed over them. However, those were bruises, subcutaneous fractures of the lower extremities, fractures of the pelvis, contusion of abdominal-thoracic viscera, and very rarely factures of the limbs, causing in exceptional cases the immediate death of the victim.[275]

After exposing the novelty of these accidents, Dr. Nuñez addressed the diagnosis and treatment of crush injuries. It was commonly believed that in such cases in which a trolley ran over an individual and one of limbs had been crushed to a point that it could not be saved, that the issue was very easy. That having such clear diagnosis, its immediate amputation was necessary. With such erroneous belief, claimed the author, the amputation is attempted within few hours from receiving the injuries, and patients die either at the beginning of the surgery or when they are being anesthetized. The unfortunate surgeons then start to question what had happened, making up a number of suppositions, but not the one that explains the death of the patient, because if they knew what had truly caused their death, claimed Dr. Nuñez, their self-esteem would suffer.[276]

Based on his years of experience treating crush injuries, Dr. Nuñez argued that in almost all accidents caused by trolleys in which extremities were crushed, the tram had also produced internal injuries such as deep contusions of abdominal-thoracic viscera and

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[275] Ibid, 546-547.

[276] Ibid, 547

solar plexus;[277] fracture of several ribs, along with the shattering of the pleura and the lung, with injury to the intercostal arteries and the consecutive internal hemorrhage.[278] The doctor argued that these injuries, which he called "hidden" injuries in opposition to injuries to the limbs that were "apparent," were the cause of those deaths at the operation room. Not having done a complete diagnosis, for him, led as a logic consequence the attempt to carry out an inappropriate amputation and its fatal consequence. Dr. Nuñez deemed reprehensible that diagnostics in these cases were not being thoroughly carried out, or at least extensive enough to establish the gravity of the patients' condition. He deemed it was just a matter of noticing the general state and not to ignore the state of traumatic shock in which all patients arrived, because besides the apparent injuries they have other grave internal injuries, which officially contraindicate the immediate amputation. He insisted that the state of traumatic shock is so easy to diagnose that there is no excuse for not recognizing it, even for those who is unaware of it. There is an unambiguous or pathognomonic sign, he argued, which is an abnormal low temperature and in all of these injuries there a medical precept that always to be observed: to take the temperature of the patient before starting to perform the amputation and not to commence the surgery if the temperature is lower than normal.[279]

Before the practice of antiseptics[280] in surgery, Dr. Nuñez explained, the death of the patient in the operation room could perhaps have been excused to a certain extent by

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[277] A complex of ganglia and radiating nerves of the sympathetic system at the pit of the stomach. Oxford dictionary.

[278] Nuñez, 547-548.

[279] Ibid, 548.

[280] Refers to the application of antimicrobial substances to living tissue/skin to prevent the growth of disease-causing mechanisms.

the argument that had the surgery not taken place, septicemia[281] could have been developed and the surgery would have then taken place at a later time under poor conditions. Today, he argued, every surgeon knows based on his practice, that in most of the cases secondary amputations give better results than immediate ones and that only in exceptional cases does the patient die.

Los Imprudentes

Accident reportage by capital's dailies not only provided vivid descriptions of the accidents and the number of lives and limbs lost in them; oftentimes they also allocated responsibility for the mishaps. There were two main targets: the passenger/pedestrian and the *motorista*. Pedestrians and passengers were labeled *imprudentes* (imprudent) reckless city walkers whose reckless, ill-judged, foolhardy actions (*imprudencias)* had caused the accident. Within three months from the inauguration of the eléctricos a report titled *Imprudencias* argued that it was fair to say that a large number of the tragedies were caused by the *imprudencias del publico* (the public's carelessness).[282] We have seen many individuals, the report claimed, who cross the railway when the streetcars are about to take off. To prevent the accidents as much as possible, it warned, let's appeal to good sense. Pedestrians were also labeled as imprudent for their attempts to cross the railway in their attempts to outrun the eléctricos.

By late 1901, an editorial article by *El Imparcial* claimed that based on their lengthy observations, at least ninety percent of accidents were attributed to the distraction

[281] Refers to the presence of bacteria in the blood.

[282] *El País*, 17 April 1900.

or *imprudencia* of the victim.[283] What they meant by lengthy was not specified, nor who had done the observations. Earlier that year, however, the government of the federal district had issued a list of preventions to counter the increasing number of streetcar accidents. Published in all the city's dailies, it argued that for a two-month period, officers of the gendarmerie had continuously travelled in the platforms of streetcars to testify the causes for the accidents. Reports gathered from these officers clearly showed them that ninety percent of the tragedies were originated by the *imprudencias* of the victims themselves, or by coachmen and carters who dispute the streetcars right of way.[284]

El Imparcial's controversial claim, however, did not go unchallenged. One of those who challenged it was Benito Muñoz-Serrano, who wrote the humoristic verses of the column "Actualidades" under the pseudonym Khit in *El País,* and who also repeatedly called out *El Imparcial* for their biased reporting. His humorous poem titled "¡Que los aplasten![285] (Let them be run over!), claimed: It is outrageous that a day doesn't go by without a citizen being split up by a trolley. It then argued that all of these things were seen by *El Imparcial* as the natural consequence of the uncultivated state of the masses that did not have a 'pinch' of good habits as it was believed by the daily that there was no human risk that intimated them or a car's wheel that did not burst them up. Commenting directly on the asserted responsibility for the accidents the poem concluded

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[283] "Apropósito del Ultimo Choque: El Mal y su Remedio," *El Imparcial*, 30 October 1901.

[284] The exact note was published under the title "Los accidentes en la via publica," in *El* Imparcial, 14 March 1901, and in *La Voz de México*, 15 March 1901.

[285] Benito Muñoz-Serrano, *Actualidades: recopilación de humoradas en verso, correspondientes a los asuntos del día, publicados por El País durante los meses de septiembre de 1901 a febrero ultimo por Benito Muñoz-Serrano (Khit)* (México, Editorial Católica, 1902), pp. 19-20.

with it seemed that it was a thing of "pleasure" to go one-armed, to be frightened, to arrive home two hours late without someone saying that you have been a coward.

In their 1909 special report on the city's tramway system, the *Electric Railway Journal* had also placed responsibility of the recurrent accidents on the victims themselves. Accidents in Mexico City, it argued, occurred as frequently as in large cities in the United States, but the source for these accidents was not the careless operation of the cars, but according to the journal, to the ignorance, stupidity or indifference to possible danger of the lower classes of natives. It added that many of those accidents were due to alcohol in the victim's system, "a vice which has a strong hold on the peons."

The fixation on the lower classes as one of the principal sources of accidents had indeed been present since the beginning of the decade. In an early special report on the nature of accidents, for instance, *El Imparcial* claimed that in many cases victims crossed streets to outrun the trolleys or chose the railways to walk over them refusing to abandon their paths despite the whistling of the trolleys drivers. The daily argued that these individuals found themselves in a deep state of mental engrossment and digression, so unique of the country's indigenous and lower class people.[286] Sometimes, added the report, they would even create social gatherings right on the railways. The daily also criticized the mothers or caregivers, who in the barrios let their *prole* (offspring) romp over the rails; the drunkards who fell under the wheels of the cars, or the blind and disabled individuals whose guide dogs frightened flee away leaving their owners under the trolley's wheels. According to *El Imparcial* another source of accidents was the stupid desire of village men (hombres del pueblo) to test their bravery by dodging cars,

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[286] "Atropellados and Atropelladores: deslinde de responsabilidades," *El Imparcial*, 7 August 1901.

not rushing to save their necks or to avoid the danger of an accident, zigzagging among coaches and trolleys to capture people's attention. These are the old and bad habits, concluded the daily, that need to be reformed, and with it we would succeed in reducing the accidents and many other wrongs (males).

Emphasis on the proper use of the streets was indeed not a preoccupation introduced by Porfiristas. Bourbon Mexico City streets, for instance, became a stage for reformers to display their power to create a clean, ordered, and rational world, a place for them to make a spectacle of themselves.[287] Increased traffic and its regulation sought to establish what was deemed proper and improper behavior. Trying to outrun vehicles and stopping in the middle of streets and sidewalks were behaviors that went against the orchestrated concert of modernity on the streets. Individuals who crossed streets in their efforts to outrun trolleys were frequently run down, as it was impossible for drivers to prevent the eminent accident. Technically electric streetcars had actually won the fight over who and what belong on the streets. Traffic regulations, for instance, established that electric streetcars had preference over animal-drawn cars, coaches, carts and all other types of vehicles, and over pedestrians. Consequently, article 15th of the regulations stipulated that when the bell was rung, the electric streetcar was to be given the right of way. In cases where agglomerations formed in side streets, a police officer of the area was to direct traffic, and everyone, pedestrians and vehicles, had the obligation to obey the officer. Article 16th commanded that coachmen and other vehicle drivers, as well as pedestrian, who did the respect the eléctrico's right of way, when the latter rang the bell announcing its arrival, were to be detained by the train's employees or the police officer

[287] Voekel, "Peeing on the Palace".

and taken to the district's government office, where they were to received the corresponding corrective.

The actions of pedestrians were constantly under the gaze of city authorities. Pedestrians were frequently reminded that it was prohibited to stop in the middle of the streets and for groups to obstruct the circulation of vehicles and animals.[288] This was a common problem as street vendors were in the habit of setting up their booths in the middle of streets, which blocked traffic.[289] Fast pace walking and running were also seemed a cause of concern. *El Imparcial* argued that pedestrians were to exit their homes, cars or coaches, or go around a group of people on the sidewalk in a slowly manner in order to give coachmen and drivers time to prevent an accident. The daily argued that pedestrian's immoderate races were common on the streets, which lead to crashes and collisions with horsemen and vehicles. It argued that paperboys and messengers particularly had this bad habit. There was also the habit of choosing the railway to walk on it, and the refusal of pedestrians to abandon it was well-known, regardless of the whistles, trumpet calls and ringing of bells. Indeed, walking on the rails was prohibited outside the city by traffic regulations.[290]

A sarcastic and very graphic note on *El Popular* discussed the dispute pedestrians and electric streetcars had engaged in over the streets. It seemed to them that the public and the company of "disemboweling streetcars" had made a bet over who would get tired first: the people of being made into guacamole or the eléctricos of making human

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[288] Pablo Piccato, "Urbanistas, Ambulantes, and Mendigos."

[289] Ibid.

[290] Traffic regulation number seventeen of the general preventions published on March 12, 1901 read "Se prohibe transitar fuera de la ciudad sobre los rieles," (walking over the rails outside the city is prohibited).

guacamole. On the one hand, highlighted the daily, most of the avocados, *machucados*, believed that one can do with the eléctricos what was done with pedestrians on the sidewalks, taking over the sidewalk and obstructing their way, and on the other the *mataristas* believed that it was enough to ring the bell repeatedly without even saying 'out of my way!" Accidents had become so common, concluded the note, that a pile of the height of the Peñon could be made, or at least a pot of seafood salad and guts of the size of the Zócalo, with the flesh torn to pieces of the *machucados*. The butchery on the streets, commented the daily, seems like it is not going to end because Christians were killed daily just as rams in the slaughterhouses.

Based on the survey of accident reportage from 1900 to 1910, victims of streetcar accidents came from all walks of life. Despite the repeated efforts of conservative outlets such as *El Imparcial* and the foreign press, the lower classes were not contributing the bulk of the blood quota. Indeed based on accident reportage during the said period, city dailies did not create the image of *imprudentes pobres* (lower class careless individuals) or anything to resemble that most victims belong to the lower classes. There was, however, some true to the statement that drunken individuals were oftentimes the victims of streetcar accidents. Intoxicated individuals had a harder time navigating streets and dodging the increased number of moving vehicles. It was particularly hard for drunken pedestrians to assess the distance of approaching streetcars. It was also a problem for drunken individuals who in their inebriation fell asleep over the tramways or decided to board streetcars against city regulations. It was indeed an everyday scene to see policemen dragging drunkards to police stations.[291] The presence of tramways nearby

[291] Piccato, 126.

cantinas and pulquerías was also a source of concern. On Molinos street there were three pulquerías in a row. The third pulquería was on the corner of Molinos and Avenida México, and had two windows that served as counter to service its clientele. These windows were less than a meter away from the railway of the San Angel line. A note from *El Imparcial* warned that individuals who serviced the pulquería were in a constant risk of being run down. Indeed, it added, they could be *triturados* (grinded) by drivers who at that same spot had already sacrificed dogs and pigs to the Electric Civilization.[292]

Los Mataristas

Public sentiment regarding the frequency and horror of trolley accidents was primarily directed towards one figure: the driver. Most of the time, *el motorista* was held responsible for accidents. They were blamed for travelling at outrageous speeds; for not making full stops and for taking off too fast; for failing to ring the bell as the approached intersections; for not doing anything when an accident was eminent; and finally for driving inebriated. Newspaper editorials, magazine articles, songs, poems, illustrations and other outlets all tried to pinpoint the factors that drove the actions of the motormen.

Matarista segador de vidas

According to an article by Dr. M. Flores on the psychology of motormen, all over the world authorities were vexed on ruling on how to avoid accidents, men of science were concerned on improving the mechanisms in order to prevent them, and the general public were hopeful of not being the victims of the progress of civilization and not to

[292] *El Imparcial*, 18 June 1903.

offer their bodies to the wheels of the streetcars of the modern fairy.[293] Dr. Flores argued that there was something mysterious and insolent in the habits, tendencies, character, etc. of great speed vehicle drivers and that mysterious and profound something played a mayor part in the unfortunate daily occurrence of crashes, *machacamientos* (crushing) and *destazamiento* (cutting up) of things and people. He believed these individuals exhibited a unique mental state, and that a so-called "psychology of the motorman" was a reality that could be proven by reasoning and by experience.

Dr. Flores argued that the habit of walking fast, or marching with speed, of devouring the space, had a constant and inevitable psychological consequence. Such habit deteriorated the mental state in the following way. Every being, which is naturally or artificially speedy in its movements, is an impatient; all impatient is bad-tempered, and deep down all bad-tempered beings there is a malevolent being. The author went on to describe the consequences of speed on the individual's character. The custom and the possibility of running, flying, of skating; the polyphagia[294] of the kilometer or the nautical mile, provides humans and animals with impulsive, brutal, and aggressive character traits, and these create a hate for the obstacle, if not a disdain for it. Once the race has begun, the brute sees nothing, feels nothing, loves nothing; in its effort to move forward, to canter franticly, to swiftly cross, and in its intoxication for speed and space, he could run over the body of his own mother. Furthermore, that speed of movement leads to another moral deviation, to arrogance, to pride, to the disdain of everyone else, to the most conceited vanity. The jockey, cyclist, chauffeur, and the motorman offered an

[293] "La psicología del motorista: influencia de la velocidad sobre el carácter," *El Mundo Ilustrado*, 1904.

[294] The abnormal increase of the need to eat due to certain psychological disorders.

alarming accentuation of these characteristics. Without trying to offend anyone, the article claimed, they are conceited, short-tempered, arrogant, quarrelsome, and it is well known to everyone that there is no bad temper that could be compared to that of the driver. In Europe, it has been proven with evidence, that respect for human life does not exist among cyclists, chauffeurs and motormen. That once launched and possessed by some type of blindness and vertigo that accompanies all fast march, they run over and knock down as if possessed by a fever, a delirium.

Dr. M. Flores invited readers to corroborate his arguments themselves by studying the physiognomies of *motoristas*. They would find frown foreheads and never a smile; bristly beards and never trimmed mustaches; fierce eyes and never a pleasing gaze; blasphemies in their lips and never madrigals; growls in their throats and never sighs in their chests. According to the Doctor, the motorist was by profession an ogre. Standing in the glass cage of its powerful machine, he looks more like a beast than like a man and he avenges his condition of vehicle driver with his criminal acts of destroying pedestrians. Fortunately, Dr. Flores concluded, civilization has a remedy for all evils and one of these days a wise German will surprise us with the discovery of the microbe of motorcycling, which must exist since there are microbes for everything. Along they will also discover the preventive and healing serum of that new hydrophobia. Meanwhile, he added, let's resign ourselves to paying our blood tribute to the new Minotaur of civilization.

El Imparcial placed particular emphasis on studying the character of the motorista. The daily admitted that early on they had agreed that with the substitution for electric traction the service would gain punctuality and speed, even if it would be more

dangerous.[295] The general public was to enjoy the advantages at the expense of a rise in traffic accidents. Indeed it was expected that the characteristics on the city (i.e. narrow streets and disorderly traffic) would largely contribute to the increase of these. Nonetheless, the newspaper recognized that they never thought that eléctricos would become such a destructive element as to cause a greater number of victims than yellow fever, the great reaper in Mexico. They also admitted that they had never expected that the motorista and the conductor would become the object of terror, perceived as unchained beasts. In a letter the newspaper claimed to have received from a motorista, the author acknowledged that their uniform was indeed feared even more than the employees from the Gayosso agency, the city's leading funeral house.[296] After three years, the newspaper declared that they could no longer claim that the reckless, drunks, or careless individuals were to be blamed since it was repeatedly proven that the conductor and the motorista, in their savage desire to do harm, knocked down peaceful travelers by taking off *before time*. They are the ones who at crossroads dispute their right of way. Others taken over by some type of vertigo, the vertigo of the automobile driver, launched their motors on a frenzy race, even in the most risky areas. Many other times, while the streetcar in running at full-speed, he gets distracted reading, smoking or eating and, consequently, they can not stop the cars when danger was eminent.

To dig deeper into the psyche of the motorista, *El Imparcial* claimed that one of its reporters had the opportunity to interview a former motorista. The interview was published in the front page of the newspaper under the title "A hair-raising interview:

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[295] "Nota Diaria: un punto rojo en la vida de Mexico," *El Imparcial*, 15 February 1903.

[296] "De nuestros lectores: La Nota Diaria, carta de un motorista," *El Imparcial*, 3 December 1902.

confidences of a motorist."[297] The interviewee was described as a man of honest customs and respectful of the life and the rights of others. In other words, unlike those motoristas described by Dr. Flores who in their intoxication of speed would run over the bodies of their own mothers. The former motorista admitted that only due to an urgent need had he worked as a motorista, and that as soon as he found another occupation, he hurried to leave and retired from "the bloody trade." He admitted he called it so because in general the corpus of motoristas was integrated by individuals who had come to consider human life as something insignificant and which they would place at risk without the least sense of remorse. If conversations motoristas have among themselves about the day's accidents could be heard, pointed out the interviewee, people would shiver out of fear. He claimed that among the corpus of motoristas there were many who had four to ten entries to the Belen jails for homicides perpetrated with their trains. The former motorista declared that there was a motorista who had killed thirty-seven individuals and every time he got drunk he had no shame in saying that he was going to cut his ponytail when he reach one-hundred.

The retired motorista also revealed that among motoristas there were areas of the city that were known to them by the suggestive name of "*mataderos*" (slaughterhouses). One of the most famous ones was the Calzada de Chapultepec. In those areas, the unfortunate individual who is ran over by an eléctrico during the night and is left over the rails is sure to die there because when motoristas see an obstacle over the railway in that area increase the speed of their motorcars and run over them since the motorista who stops is the one apprehended and charged. He claimed that that was the reason why so

[297] "Una entrevista espeluznante: confidencias de un motorista," *El Imparcial*, 16 February 1903.

frequently remains that present little resemblance of belonging to a human being are picked up in that area.

Addressing what could be behind the motoristas' gestures, the informant argued that he was certain it was nothing else but the almost complete impunity that they enjoyed after traffic accidents. He added that motoristas knew that the penalty for homicides they committed with their cars, was never more than four months. They were so accustomed to it, he argued, that ending up in Belen was called 'to season there." For them entering to Belem, he argued, was part of the trade. For him the only way to suppress the grave behavior of most of the motoristas, which had been pointed out repeatedly, was to rigorously punish all the accidents they commit when it is proven with evidence that it was their fault.

This was not the first time that *El Imparcial* had published comments made, according to them, by motoristas themselves. On one occasion, a group of three young men boarded a midnight eléctrico leaving the Zócalo for the Villa de Guadalupe.[298] Among the passengers there were five or six employees of the Ferrocarriles del Distrito, three of them motoristas. According to the young men, the motoristas one by one began sharing aloud the hair-raising details of the gravest accidents they had caused. The third motorista told the story of a *señora* who was crossing the railway at the time his train was approaching. The unlucky woman got one her boot's heel stuck between the rails and was trying to get it unstuck. To scare her, he accelerated and began ringing the bell repeatedly. According to the motorman, this gave way to a very funny scene. The poor woman made the sign of the cross, called upon all the heavenly court and even asked for

[298] "La anterior reencarnación de un motorista: Los atropellamientos se toman por hazañas, se necesitan castigos severos," *El Imparcial,*

the train to stop. When the motorista tried to stop the train it was too late and the woman was left with an amputated foot. The motorista finished his story arguing that the victim had been the one responsible for being stupid.

Two months before the publication of this interview, the newspaper had published a letter authored by a current motorista addressed to the daily's director. The letter declared that when the newspaper began publishing the daily trolley accidents under the section "Daily News," it had had a very unpleasant effect on motoristas.[299] They expected that the tramway company would be obliged to obey the corresponding regulations and once the pretext of the excessive speed in which they were obliged to drive had disappeared, the motoristas were to be held accountable for their behavior. But after a number of published issues with the so feared news, and given that things continued as they had been since, their fear had disappeared and the custom made them look for it [Daily News] to read it as one looks for the calendar of saints' days or the entertainment ads. The motorista claimed that in order for the wedge to stick, it has to be from the same plank, and that he had an idea for a solution. He argued that their uniform had been greatly discredited, and that it was not fair that for a handful of motoristas they all had to pay. He believed a differentiation had to be made. Just as the soldier whose bravery stood out in battle or the saint who conceded a miracle are recognized with medals, so should those motoristas whose accidents produce amputations. If a leg was lost in the accident, then a leg was to be hang on their jacket's right lapel. In that way, proposed by motorista, if accidents continued, decorations should continue until motoristas drove their cars with their breasts full of flashiness and pedestrians will then know what they were facing.

[299] De nuestros lectores: La Nota Diaria, carta de un motorista," *El Imparcial*, 3 December 1902.

No regulation is known of *milagros* being required on the uniforms of motoristas, but a few months after that idea was published in *El Imparcial*, motoristas began wearing golden plackets on their uniforms, each representing a year of service for the company. A sarcastic note published right next to the above-mentioned letter called for the use of kepi-hats for the motoristas.[300] It claimed that there had to be equality before the law. It asked why Chavelas, who wore a dark blue uniform with silver inlays and knew how to drive the trolley and the counter-trolley, and the re-counter-trolley could not wear a kepi-hat with a numbered badge just as the city cleaning crew do if they also belong to the public health department. It asked whether the cleansing Chavelas and his partners did everyday and all day, clearing the thoroughfares of pedestrians by the comfortable procedure of *plataformazo* (hitting them with the car's platform) was not enough. It argued that the motoristas along with automobile and wagon drivers, and cyclists made up one of the best cleaning crews out there.

There was also an effort made by *El Imparcial* to highlight the name of those motoristas who, according to their accounts, were recurrent offenders. According to the daily, motorista Amario Hernández, who had killed a young man by the name of Salvador Rebollar, and who by early 1903 had allegedly ran over twenty-five individuals, out of which at least eleven had been killed and fourteen had been severely injured.[301] In a sarcastic tone, the note went on to say that surely the Company could not go by without the services of such efficient employee. They were sure that when Hernández accumulated twenty victims, he was promoted to first-class motorista and now, after the death of Rebollar, he had been named Chief of the Zaragoza Division. This last

[300] "La igualdad ante la ley: el descanso dominical," *El Imparcial*, 3 December 1902.

[301] "Los ascensos de un motorista: nota curiosa," *El Imparcial*, 18 April 1903.

promotion, it added, certainly means that the company feared that its employee might have a nervous breakdown or develop a heart condition if he continued to witness bloody scenes and that is why they wanted to avoid the risk of having more victims. After motorista Leonardo Escutia ran over an eight-year old boy who was left with both feet completely destroyed, the newspaper pointed out that Escutia had the greatest number of entries to the town hall of Tacuba due to crashes and collisions and had always been sent to the capital at the disposal of the authorities."[302] That piece of information, the paper added, deserve to be taken into account.

It is impossible to determine whether or not these accounts were indeed testimony coming from anonymous motoristas themselves. But it is important to point out, nonetheless, that the statements claimed to have been made by these motoristas contributed to the image of motoristas created by the newspaper itself. That is, the details these individuals provided about their trade reinforced an image that had been put together by the newspaper. In addition, no information provided by these motoristas contradicted or challenged that image. They also called for the same solutions the newspaper had been offering for some time. The motorista, then, not only expressed, both verbally and through their actions, a complete disregard for human life and the rights of others, but also went about narrating their criminal pedigree without any remorse.

The complete disregard for human life expressed, according to *El Imparcial*, by the motoristas themselves was widely echoed in their representation in other popular sources. Songs and humorous verses colorfully described their great exploits. A song titled "Los Motoristas," explained that the motoristas were cunning and violent and ready

[302] "Notas de Tacuba," *El Imparcial*

like no one else.[303] They were so quick, it claimed, that they stopped their *reelèctrico* car after they already ran over two and three on the street. The song revealed that among the vulgar people they were called *mataristas*,[304] and they were not liked the very least because of their fine brusqueness. The song sarcastically said that in reality they were not responsible because pedestrians were at fault for failing to smell where the streetcar was coming from. They were to be blame because they jumped between the rails to see if the train or motorista could do a miracle. It concluded "poor, poor motoristas! They surely have it bad, poor, poor Motoristas of this great city!."

Humorous verses also made evident that pedestrians and passengers were indeed at the mercy of the motoristas. A verse titled "Los Terribles" argued that with those furious motoristas, with such a violent character, the public was at a great risk unless passengers affectionately exclaim as they exit "young man of pale hat and canary-colored uniform, in the name of your mother who had the pleasure of carrying you on her womb, please stop the convoy, suspend your speed of beam and if you allow me, I'll get off in the corner."[305] The same sense of powerless in the face of motoristas was echoed by the verses of Khit. In one of his untitled verses he noted that motoristas were indeed the referees of so many citizens as once in their cars they were sovereign authorities, and did as they pleased.[306] Their verbal treatment of the riding public was equally criticized. Those who dare to speak up, claimed the verse, received a reply with a sea of atrocities,

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[303] Antonio Vanegas Arroyo, *Canciones Modernas* 1906, pg. 13.

[304] A play on the word motorista, matarista means those that kill.

[305] "Los Terribles," *El Imparcial,*

[306] "Actualidades: humoradas," *El Pais,* 28 October 1901. This also makes reference to the fact that drivers had been invested with the power of policemen inside the cars and could detain individuals who, in the driver's judgment, had violated a section of the regulations.

even worse if the offended party happened to be a woman, because she ended up hearing what she had not heard or hoped to hear in her life.

Commentary on the nature of motoristas came from all corners of society. Querido Moheno, recognized Mexican lawyer and journalist, and Secretary of Foreign Affairs from 1913-1914, for instance, compared the motoristas he found during his stay in New York with those of his country. He had lived there at a major cross street of enormous traffic where hundreds of trolleys, omnibuses, automobiles and coaches passed by every minute.[307] In that same corner, he repeatedly saw a group of young paper boys who gathered there and played disorderly. Had that happened in his native country, he argued, within five minutes there would have been someone run over, while he never saw one in New York due to the solicitous respect drivers had towards children. Something he esteemed so abundant there as lacking in his country.

Matarista Inmoral

If the behavior of motoristas was constantly under debate, the reasoning behind it oscillated from immorality, to ignorance and finally to their drunkenness. It was claimed that their behavior was immoral in the sense that in their effort to fulfill the requirements of the company, they were willing to literally run over those on their way. Their habit of driving in the downtown area at the same speed they did on unpopulated areas was largely deemed the cause of accidents. According to an editorial article in the front page of *El Imparcial*, motoristas had confessed that although they were fully conscious of the fact they were going against city regulations, that as soon as they could they drove their

[307] Querido Moheno, *Cosas del Tio Sam* (San Antonio, TX: Talleres Tipograficos de "Revista Mexicana," 1916), p. 116.

cars at full speed.[308] The reason behind it, however, was said not to be a personal choice, but instead they were obliged to do so because the slightest delay in their schedule, translated into fines or suspensions. So caught between reduced salaries or losing their jobs, and decreasing themselves the city's population, they would rather have the former. Such selfish reasoning, the article added, without a doubt would not suffice to free them from their responsibility before the law, because the law does not authorize anyone from taking someone's life in their quest to earning a few more cents. Their argument was thought to be profoundly immoral. To accept it would also excuse those who rob to satisfy their needs, hired assassins. It would destroy the principles of justice and the rule of law. We believed, the paper added, that a statement of this type could be sufficient to consider the author of an accident, responsible for a premeditated crime, and not of a crime of negligence. Company regulations to complete their runs in a determined amount of time, according to the confessions of the motoristas gathered by the newspaper, oblige them not to stop their cars long enough for passengers to get on or off, which led to many accidents. It also prevented them from lowering their speed when crossing intersections and switching tracks, which oftentimes resulted in catastrophes.

It was common that in the aftermath of accidents for passengers and victims themselves to declare that the train was running late and in order to "make up time lost," the motorista was not making full stops or not making the marked stops.[309] The frequency of fines and suspensions, plus the fee motoristas were charged for the badge they wore on their hats, led motoristas and conductors to organize a strike on the Day of the Dead in

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[308] "Los Motoristas: ¿Victimas de un conflicto? Deberes de humanidad y deberes de empleados, necesidad urgente de regularizar el trafico, los vehículos y los pedestres," *El Imparcial*, 27 September 1902.

[309] See for example "Escena a bordo de un tren," *El Imparcial [look up date]*

1902.[310] Although the strike did not take place, the resentment for those charges and suspensions remained. In the following years, an additional charge for car repairs was added to the list. The 1914 bylaws of the *Sindicato de empleados y obreros de la Compañía de Tranvías de México* included in their petitions the absolute abolition of the deductions, burdensome and arbitrary, for damages their cars suffered during service.[311]

Regarding the timed-schedules the motoristas claimed regulated their behavior, *El Imparcial* questioned whether or not the Company had studied their schedules, in order to base them not on the electric power that could be generated at the Indianilla powerhouse, or the speed at which their engines could run, but also, and most importantly, at the special circumstances of the city in which their cars travelled. The article argued that it would be an absurdity for the company to apply the schedules and type of mileage of American trains to the circulation of trains in the capital. *El Imparcial* argued that in the city trains journeyed through very narrow streets, invaded by a multitude of individuals who did not how to walk and that spilled over from the sidewalks until they occupied the whole street. Streets where *simones* evolved at all hours, where there were plenty of *tancredos* riding burros, whose drunkenness pushed them to stand firm in the middle of the railway and wait for the motorcars.

Excusing to some extent the role of the company, the *El Imparcial* believed that the company had taken all of those conditions into account when establishing their schedules and that the strictness of their orders corresponded to their praiseworthy desire of providing a regular and fast service, and not saving money, which would be

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[310] "Huelga de conductores y motoristas," *El Imparcial*, 4 November 1902.

[311] AGN, SCOP, 3/250-1, "Huelga de los empleados del servicio de trafico y suspensión del mismo," p. 1.

punishable. Regardless, it argued that it would be beneficial for the company to review the issue, and to carry out a new and detailed study. Based on their findings they could then fix their final, prudent and consciously refined schedules. Leaving the company's responsibility aside, the daily argued that even if the company had limited the time of each of their runs, to the extent that motoristas in order to fulfill them they had to violate the city regulations, they believed motoristas were obliged of obeying them before any other orders. In their opinion, motoristas had two choices. If they wanted to they could protest against the company's orders or if they were scrupulously honest, they could leave a job incompatible with their duties as citizens before hiding behind an order to violate the law and commit real crimes.

El Imparcial not only appeal for the motorista to uphold their duties as citizens, it also made a call for all citizens to contribute in any way possible to preventing accidents, and in the case they did take place, to do what they could to make sure those responsible pay for them. Citing a recent fatal accident, an editorial piece pointed out that the motorista had a good chance of going unpunished.[312] He knew perfectly well that the victim could not declare against him and that there was not going to be any unfavorable testimony against him. Which of the passengers, the note asked, would abandon the eternal attitude of all Mexicans when faced by the questioning of authorities? Who of the individuals who witnessed the event and were to be called by the judge to make their testimony would for once forget to say, "I did not see it," and open their lips to say the truth? This was impossible. In case there were witnesses, they would comment the details of the event among their relatives or would excuse themselves or those that would declare

[312] "Cómo reducir el numero de victimas: los atropellos por los eléctricos. El publico es uno de los primeros culpables de accidentes. Habría menos victimas si el publico dejar su eterna apatía: la defensa de cada uno es la defensa de todos," *El Imparcial*, 30 April 1903.

would do it in a ambiguous way that did not the delivery of justice. Now that this latest accident had called public attention, the article argued, we ought to question whether or not in many other cases the witnesses' silence has left a real assassin go unpunished, or if the public's indifference has become an accomplice of the crimes of the motoristas.

Reflecting on the unforeseen consequences of these old-fashioned habits of the population, the article argued that certainly the number of accidents would significantly be reduced if in each case the passengers of the train, pedestrians or those who could give exact information of the causes of the accidents would voluntarily go to the authorities and tell what they had witnessed. The daily argued that it generally believed that the individual who declared in a case or helped in the pursuit of justice did not obtain any benefit from it. Even if there is not a moral notion that obliges a citizen into contributing to the success of justice, claimed *El Imparcial*, there is the consideration that such behavior, followed by most, would inevitably reduce the number of accidents to which we are *all* expose to. The article concluded that in doing so they would do an act of civilization and humanity, and would reduce the bloodbath on the streets.

Matarista Ignorante

Discussions on the nature of the motorista not only described him as an immoral worker that in order to meet scheduled stops, had grown to disregard the lives of others just to save his own neck, he was also referred as an idiot, stupid and overall, ignorant individual. After merely two years and hundreds of accidents, very few came in defense of the *motoristas*. The *Mexican Herald*, indirectly came to their aid when it published a note on the Ferrocarriles del Distrito. In it, the newspaper for and by American residents in the city, argued that the public of the city was to be held responsible for the frequent

accidents. Praising the work of the Mr. Charles Clegg, the current Company manager, the *Herald* said that it was indeed very difficult to manage the company and that even the most skillful motorman would be scare of driving the electric streetcars in the streets of Mexico. The note acknowledged that among the corpus of motoristas there were many who were stupid, rude, and entirely useless, but it claimed that was how the rest of the population in México was, from which the company choose its employees. Those statements deserved a fervent response from *El Imparcial*.[313] The response, however, did not challenge the *Mexican Herald*'s descriptions of the motoristas, but rather the argument that these reflected the rest of the population. *El Imparcial* pointed out that they had stubbornly denounced Mr. Clegg for choosing for such important position as that of the motorista men who had been unable to secure a job anywhere else, and who, pressured by need to accept a position with a miserable salary slightly higher than that of a peon in bad times.

We agree with the *Herald*, said *El Imparcial*, in that it is impossible to improvise useful and polite motoristas among individuals with no education and who lack any type of common sense to understand what an electric motor is and the responsibility they sign up for. It is also true, it added, that for a miserable salary, not only in Mexico but also in any part of the world, you would not be able to provide service of average quality. Thereby, it concluded, the deficiency of the service is the responsibility of the management. The newspaper also cited that the reason why during his administration the company's profits have been so fabulous (>12%) is because it has come at the expense of many victims, of many and grave setbacks for the public, which sees itself threatened at

[313] "Una defensa de los motoristas: Los motores eléctricos y el publico de Mexico," *El Imparcial*, 15 January 1902.

the same time that service declines. Mr. Clegg should recognize, added the daily's response, "that the Ferrocarriles del Distrito is not business of usury; that the position he has is to conciliate between the interests of the company with those of the public, which he is a server for and not an extorter; a position that provides him the way of making such substantial profits." *El Imparcial* argued that one did not need to be a great railwayman to understand that by increasing employees' salaries just a bit, they would get a fairly good service. If Mr. Clegg wants to obtain great profit, which he was in his right of doing, the most rudimentary moral and the most primitive common sense, concluded the daily, indicated that he had to improve the service in order to attract more public instead of running over it, ending lives and injuring interests.

News that 500 accidents, more or less significant in nature, had taken place in a single semester involving *eléctricos* in 1903 opened the debate over the motoristas skills once again. *El Imparcial* argued that the electric car could not be driven by uneducated hands as the horse cars were. The eléctrico was a much more complex mechanism and in Mexico, to fulfill the demands of the moment, there had been the need to improvise with employees who did not have the indispensable skills to drive them correctly.[314] That explained, it concluded, why many times the motorista could not stop the car in time to prevent a crash or an accident.

If ignorance was at fault for the increasing number of accidents in the country's capital, the French daily *Le Courrier du Mexique* proposed, motoristas needed to receive special technical instruction and had to pass a test before allowing them on the streets. *El Imparcial* reproduced the proposal of the French daily and delved into the topic to

[314] "Los accidentes en los ferrocarriles eléctricos," *El Imparcial*, 19 March 1903, p.1.

provide its own opinion on a front-page editorial. In theory, the note added, the idea cannot be better. Even if it does not eradicate accidents from the streets, it argued, it could at least reduce the fourteen or fifteen accidents we have on a daily basis.[315] But if the solutions looked so easy in theory, the daily argued, it was less so in practice and it could be guarantee that, for now, it was unrealistic. They believed electric traction is too recent in Mexico for its service to be perfectly organized. Anywhere else, *El Imparcial* contended, the correct organization of the service would take some time, but in our conditions, that period of time had to be certainly larger. The report then went one to explain those conditions. The daily explained that the city had jumped, without any transition; from that awful, rudimentary, and primitive service of the old horse trams to an electric traction system just like those of the most advance cities of the world. The city had adopted the latest procedures without having the least notion of what the trolley car was. According to their research, the records of the company showed that the corpus of motoristas renew itself with a shocking frequency. There were employees who would only hold the position for a few weeks and there were others who had been motoristas for alternating seasons. The company argued that for now they could not increase their salaries and with poor salaries, the report concluded, it was impossible to have selective technical personnel. The daily contented that those who accepted the poorly paid job were almost illiterate and thereby it was possible to improvise a skillful electrician out of an illiterate, or an intelligent mechanic, in a few days. The newspaper once again argued that the key of the issue was the salary. As long as the company paid motoristas at the rate of a day laborer, it was not going to have, as it should, intelligent workers to properly

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[315] "Los motoristas: su instrucción publica," *El Imparcial,* 11 September 1903, p.1.

drive the cars, nor there was going to be individuals who were willing to undertake a long traineeship to earn a few cents a day.

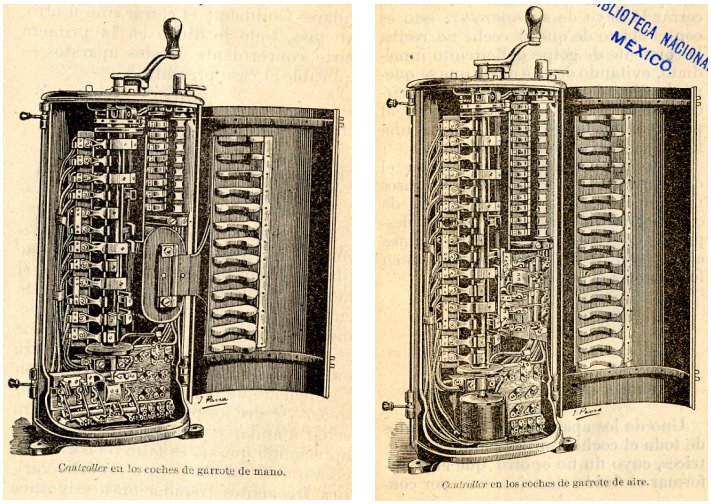

Fig. 13 Streetcar air and hand brake controllers
Source: Rafael Tejada Portuondo, *Guia del Motorista*.
(Mexico: Herrero Hermanos Editores, 1903),

The argument of the limited skills of the motoristas as one of the sources of accidents might indeed have some weight. There were many cases in which passengers declared that the motorista had actually speed up the motorcar instead of slowing down when a collision was eminent. To understand the job of the motorista, *El Imparcial* researched and reported what they saw aboard the streetcars for their readers. According to their findings, at all times, the motorista had both of his hands engage in manning two handles and with his feet he had to operate the bell or the whistle. He was also responsible to look after the pole that connected the car to the circuit. For them, the motoristas resembled those orchestra-men that play several instruments with their feet, hands, and mouth, who only managed to do so with a complete dedicated and long-term practice.[316] The daily's observation although charmingly described, does illustrate the multitasking the motorista had to engage in. One of his hands operated the controller,

[316] "A propósito del Ultimo Choque: El Mal y su Remedio," *El Impacial*, 30 October 1901.

which regulated the speed of the car. This handle was moved (or opened) from right to left in order to progressively go from notch one up to notch nine.[317] Placing the handle to notch one put the car in motion. In order to shut off the current the controller handle had to be brought rapidly back to the off position without stopping at any point. Next to the controller handle was the reverse lever, which controlled the direction of the car. With his other hand the motorista operated the brake lever. It was well understood that one of the most important duties of the motorista, as well as the most difficulty one, was the operation of the brakes.[318] The brake when applied would consume the energy stored in the car by the motors. This energy was overcome by the friction of the brake shoes on the wheels of the car.[319] Streetcars in México used two types of brake mechanisms: either hand brakes (garrote de mano)[320] or air brakes (garrote de aire).

In an emergency situation, described *El Imparcial*, the motorista had to operate the bell or whistle with either his feet or knee; his left hand tried to reduce the car's speed, while his right hand tried to destroy the acquired speed. In the excitement of an emergency situation, the report argued, when the dread of an immediate catastrophe overcomes one or the surprise of an unexpected event is experienced, all complicated mechanism was a defective mechanism, and only with years of practice, which our motormen lacked, could one give those movements the unique automatism and

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[317] Carlos Islas Bustamante, *Manual del Motorista* (México: Tipografia de Bouligny & Schmidt Sucesores, 1908), p. 19.

[318] Ludwig Gutmann, *The motorman and his duties: a handbook of theory and practice for operating electric cars*. , 45.

[319] Ibid, 141.

[320] As defined by Gutmann, hand brakes where those in which the power which draws the brake shoes against the wheels was supplied by the strength of the motorman, either by the winding of a chain on a staff or as on a few roads by a longer lever. Air brakes where those in which the power drawing up the brake shoes was compressed air acting against a piston.

instantaneity capable of preventing a disaster. The complexity of the mechanism was not the only issue at hand, added the report, additionally, the divergence of the movements that both handles required went against both instinct and custom. In order to stop a running motorcar, contended the report, the motorista had to brake rotating the handle inwards and moving the controller handles outwards. In other words, the right hand had to rotate the first handle one way while the left hand had to impel the other handle in the opposite direction. The report invited readers to try to do the movements themselves to prove that they were noticeably harder and above all less instinctive, and less automatic than symmetrical movements. It also encouraged them to think how these movements might indeed become insuperable under emergency situations. The report concluded by calling for a simplified mechanism acknowledging that it was impossible to demand inexperienced drivers the skills of a clown or a juggler, particularly in the moments in which their lives and their responsibility were at stake.

Matarista borracho

It was also no secret that in the aftermath of many accidents authorities found out that motoristas had been driving intoxicated. The issue of drunk drivers received special attention after a detailed study of trolley accidents by the municipal government pointed towards alcohol as a common factor in those accidents. To address the problem, the federal district government decreed in 1904 that electric streetcar employees, while in service, were prohibited from entering alcohol-serving establishments. It argued that given the fact that the number of accidents, many times the responsibility of the victims, but in others to the inexperience of the driver, increased by the use of alcohol, as it has

been proven that in many instances they are stimulated by their consumption.[321] The city council based its decision to address that wrong [mal?] in an effort to decrease as much as possible the contributing factors of accidents. The council also clarified that indeed streetcar employees were prohibited from drinking while in service as they had been invested with the duties of police officers in order to make sure that the *Reglamento de Ferrocarriles* (Article 12) was observed inside the cars, and thereby, they were to obey the *Reglamento de Bebidas Embriagantes* that (Article 21, fraction II) prohibited police agents in uniform to enter cantinas and other alcohol-serving establishments.

The regulation not only prohibited employees, while in service or in uniform, from entering cantinas, pulquerías or other intoxicating beverage-serving establishments, it also prohibited the owners of those businesses from selling or serving uniformed employees wines, liquors, beers, pulque or any other intoxicating beverage. Those in violation of the regulations faced both fines and jail time. A violation incurred by an employee, for instance, was penalized with a fine of three to ten pesos or with one to ten days in jail. The company was also to be notified to have the violation entered in the employee's conduct record, as well as to withhold the amount of the fine from the employee's salary. Those that committed the transgression of serving them, or the owners of these establishments if it was impossible to determine who had poured the intoxicating beverages, was to be punished with a fine of five-to-fifty pesos or with five to twenty days in jail.

Certain motoristas understood the threat they posed to the public when driving intoxicated and, at least in some ways, they tried to leverage that to their advantage. In

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[321] "Prohibición para que los empleados de los Ferrocarriles del Distrito Federal en servicio penetren a los expendios de bebidas embriagantes," México, 15 May 1904.

early 1912, a group of motoristas, conductors and other employees of the electric streetcar company sent a letter to the city council with a special request. The under signers argued that for the last four years Juaquina Corral, a poor lady, had placed herself in the south side of the Zócalo with a pewter pot filled with fresh water. Juaquina, the authors argued, had provided them a great service by offering them perfectly clean water, deterring them from having to drink dirty water or having to carry bottles of pulque, to satisfy their thirst, particularly, in the hot season, which had just started.[322] According to them, the aforementioned lady had been recently prevented from placing herself in the Zócalo, which resulted in two setbacks: on the one hand, she had been prevented from securing an income for herself and her elderly mother, and on the other hand, it harmed them as it oblige them to drink poor quality water threatening their heath, at the same time that it oblige them carry a bottle of *pulque* at all times. The latter, they argued, could be harmful to the public in the long run in the likelihood that some of the employees might become intoxicated and would be unable to satisfactorily carry out their responsibilities. Having justifiably explained their situation, the under signers asked the city council to allow Juaquina to continue to sell them water.

Four years after the city council prohibited motoristas the consumption of alcoholic beverages during service hours, *El Imparcial* concluded that these regulations had not produced the expected results because motoristas had found a way around them. Instead of having their liquor served at the bar, they had them served inside their own trains.[323] The liquor was taken to them, the review found, by one of those thousand

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[322] AHDF, Fondo: Ayuntamiento, Sección: Gobierno del Distrito Federal, 1738/987/1910-11.

[323] "La movilidad y los accidentes de la circulación: urge que los transeúntes lleven salvavidas," *El Imparcial,* 7 January 1908.

accomplices unconscious of the menace the intoxication of drivers produced. The paper went on to say that if the motorista's uniform was taken away to return him to his natural environment, it was evident that they were not against a company's negligence but against a social state incompatible to a certain extent with the use of particular forms of progress, which at the hands of uncultured men unconscious of their responsibilities, they become highly dangerous and destructive.

Conclusion: missing the note of the modern symphony

Accident reportage in the first decade of the twentieth century reveals much more than the city's and its citizens' experience with electric streetcars. They open a window into how larger anxieties of the period were expressed in the debates over accidents. From the first news of the plans to electrify the city, newspapers expected the accidents. Indeed, they interpreted them as the price to be paid in the country's civilization path. The promise of faster travel was thought to be too vital for modern life and thereby, too valuable to reduce speed for the sake of lives. *El Universal*, for instance, advised readers to step to the side if they did not want to become a "victim of civilization." Both faster travel and accidents went hand in hand and the exchange was seen as inevitable. It was left up to the citizens to decide between riding the cars and falling victim to them.

Public behavior, then, in and around streetcars was closely policed. There was a marked effort to regulate pedestrians and their actions on the streets. Walking the city was no longer to be done in reckless ways, but rather in rational and institutionalized methods. Unmethodical walking and running went against the grain of urban modern life. Those who missed a step in the orchestrated dance of modernity were deemed "imprudentes," careless citizens whose imprudent actions (steps) had no place in the

modern city. Although victims of streetcar accidents did not predominantly belong to the lower classes, there was an effort to identified the lower classes as holding up to habits of yesteryear. By challenging the use of the street, sidewalks and railways as well, the actions of these individuals were considered incompatible with modern life. Lower class and indigenous men, women and children alike were thought to share an "indifference to possible danger," a fundamental ingredient for modern life. Under that rationale, they were to become the victims of civilization for failing to carry out their own trials with electricity.

The fixation of the pro-regime newspaper by excellence on the obstacle lower classes posed for the country's progress invites closer inspection. From early on, *El Imparcial*, ran extensive editorials diagnosing the sources of accidents. Their reports made outlandish claims on the victims' role in accidents and it was not until their stance was harshly ridiculed by other outlets that their "investigative reporting" began to acknowledge the complexity of the transformation taking place on the streets. Before their about-face, however, their reports illustrate an anxiety of the times: the lower classes' capability to become modern citizens or perhaps just citizens in a modern city. This anxiety was in a way more closely expressed in the newspaper's treatment of motoristas. Besides animalizing their characters, the daily carried out an exhaustive examination of their natural state. They were deemed immoral, ignorant and drunkards. All of these considered characteristics of the lower classes. They were immoral for placing their own welfare (income) at the expense of the public's safety. They were also immoral for placing the company's regulations (scheduled stops) at a higher ground than those established by the city. Their so-called immorality, however, was not discussed in

relation to the higher speed (promoted, promised and valued) and the regularity of the service afforded by electric traction. The motoristas' ignorance was particularly highlighted as the principal problem. Their "type" was incapable of handling modern machinery. They were considered illiterate, or close enough, to ignore the complexities of electric traction. They were thought to ignore the importance of their trade and to have signed up for the job without second guessing what it required. The company who hired them, however, was held responsible for attracting the worst of what the country had to offered. Miserable pay, the daily continuously argued, could only attract those who had been unable to secure an income anywhere else. Educated hands were elementary in the proper use of machinery.

Anxieties over alcohol use had been expressed since at least the implementation of the Bourbon reforms in the second half of the 18th century, and had been renewed during the Porfiriato. The increased presence of machinery in the expanding trades in the country made the use and abuse of alcohol among the working classes a matter of concern for the authorities. It was one thing to have pedestrians run down for failing to adapt to the presence of new technology on the streets, but it was a whole other matter to doubt whether or not the country's working class was to make productive use of modern machinery. The latter placed the nation's economic development at risk. Technology that was essential for the country's progress "at the hands of uncultured men unconscious of their responsibilities…become highly dangerous and destructive." They lacked the hands, feet and mouth of the orchestra-man to lead the modern symphony of the city's streets.

CHAPTER III
Ladrones de Luz, *brincadores* and *diablitos*: Policing electricity consumption in early twentieth-century Mexico City

Oliverio López Araiza, an electrical expert from the Federal District government, and Guillermo Feuss, installation supervisor of the *Compañia Mexicana de Electricidad*, arrived on the afternoon of December 13 1901, at the Ambos Rumbos Hotel on Vergara Street, number 11, accompanied by the 4th District's police inspector.[324] Manuel Fernández, the hotel's administrator, informed the party that Francisco Torres, the owner, was not in the hotel. The group asked to be escorted to room 35, but was informed that that was not possible since Alejandro González, the room's occupant, was out of town and had taken the key with him. Given the inconvenience, the group proceeded to secure permission from the lodger occupying the room next door. The plan was to access room 35 through its balcony, which faced the street, by jumping in from the adjacent room. At that point an individual suddenly exited room 35 and hurriedly tried to make his way to the roof terrace, but the police inspector promptly stopped him. The fleeing individual was none other than Francisco Torres. Once inside room 35, the group found two cable ends in the balcony's small canal, which had been cut, but the cable followed its way inside the room. On the balcony there were also a mattress and a *sarape* on the handrail, blocking the view from the street. López Araiza and Feuss assured the police inspector that although the cable connection in the balcony had been deliberately cut, there had been indeed an electrical connection there. To demonstrate it, they joined together the cable ends found in the balcony to those found inside room 35. Instantly, the flight of

[324] The following details on the case come from the *Diario de Jurisprudencia del Distrito y Territorios Federales*, Tomo I, Num. 17, 20 January 1904 and Tomo I, Num. 18, January 21 1904.

stairs, the office, the lobby, the hallways, and 35 rooms of the hotel were illuminated. A total of 57 electric lights were joined in that single circuit.

Francisco Torres, a 35-year-old Spanish citizen and businessman living in Mexico City, declared he had owned the hotel for about fourteen months and that about a month ago he had requested a connection from one of the electric companies in the city. Given the high cost of the estimate received, he had decided to do it himself. The electrical circuit he made connected all the rooms in the hotel to the administrative offices and the common areas. Wanting to test the circuit he proceeded to feed off one of the electric lines on Vergara Street. He did this, he acknowledged, with the intention of subsequently approaching the electric company to have it provide and charge for the electricity consumed. Time went by and he forgot to do so. He claimed it had only been a month since he had been using electricity to illuminate the rooms that had been occupied, and that no lights were ever turned on in those vacant. It had been two days, since he had interrupted the connection. The search party had found him in room 35 because given that it was vacant, and he had entered it to rest for a while. He had placed the sarape and the mattress in the balcony, he argued, to make sure they were indeed clean.

A couple of days before the search at the Ambos Rumbos Hotel, Gabriel Ortiz, representative of the *Compañia Mexicana de Electricidad*, had gone to the office of the Ministerio Público (public prosecutor's office) to report that someone on Vergara street was stealing electricity.[325] He did not accuse anyone in particular, but electricity theft was suspected since the company's electricity meters for the circuits on Plateros, Vergara, and San Andrés streets were recording levels of energy consumption higher than those

[325] "Robo de Luz Eléctrica, cateo en un hotel: Conexiones peligrosas," *El Imparcial*, 19 December 1901.

expected from the installations made by company in the area. Ortiz asked the authorities to help locate fraudulent connections and offered the company's line guards to do so. The company's representative was back at the Ministerio Público the following day to report that they had pinpointed the Hotel Ambos Rumbos as the establishment that had clandestinely been using the company's electricity. He asked the authorities to carry out the *vista de ojos* (visual inspection), previously described. If their suspension was proven, Ortiz demanded those responsible to be charged the cost for fraudulent use of electricity.

A few days after the visual inspection, bail was set at 500 pesos for Torres, which was promptly deposited at the Banco Nacional by one of his employees. For the next fifteen months, Torres faced the legal process brought against him from the comfort of freedom. In late March of 1903, the second correctional court, under the leadership of Lic. Ismael Elizondo, summoned Torres. The district's police station informed the court that the accused was not found in the address he had provided and there was no information of his whereabouts.[326] Elizondo issued an arrest warrant for Torres who was captured a few days later. Although he alleged his address had not changed, the judge revoked his bail bond and he was imprisoned at the Belén jail. On March 30, Torres was found guilty of electricity theft and sentenced to one year in prison with a fine of thirty-three pesos and seventy cents. The case reached the court of appeals by the end of the year, and in late January 1904, it confirmed the sentence set by the lower court.

Torres's clandestine electrical connection was not an isolated case. The note from *El Imparcial* on the search carried out at the Ambos Mundos Hotel went on to describe other recent investigations that had revealed similar fraudulent and dangerous

[326] "Dueño de hotel reducido a prisión: Robo de Luz Eléctrica," *El Popular*, 23 March 1903.

connections to the electric lines that crisscrossed the city. A hair salon in the area of Santa Ana, for instance, using a poor quality cable had made a circuit to connect with an electric line that serviced a nearby drugstore.[327] Five electric lights were found inside the hair salon and it was believed that it had been a couple days since the installation had been interrupted given that a few nights earlier the establishment nearly went up in flames due to the poor electrical connections.[328] The flat's roof had been burned and the cables had been cut where they had once made contact with the line providing the electricity. Two more searches were scheduled to take place the day the newspaper article on the Torres case was published: a molino (nixtamal mill) was said to be stealing electricity to light up twelve lamps and a motor and a commercial house had established an illegal connection for two arc lamps and fifteen electric lights.[329]

Electricity theft had become one of those modern crimes resulting from the processes of urbanization, industrialization and the introduction of new energy sources to the capital. Unlike other common types of crimes (battery, petty larceny, and burglary), electricity theft required skills and knowledge about electricity to perform illegal installations or tamper with the meters. A heterogeneous crowd of individuals possessed these skills. Likewise, the policing and detection of this type of theft required some expertise or at least access to certain information to distinguish illegal from legal connections. Unlike other crimes, individuals employed by electric companies carried out

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[327] "Robo de Luz Eléctrica, cateo en un hotel: Conexiones peligrosas," *El Imparcial*, 19 December 1901.

[328] For a discussion of the increased frequency and intensity of fire hazards at the turn of the century see Alexander, "Quotidian catastrophes."

[329] Ibid.

the policing, but there were also instances in which anonymous informers sought to gain some reward or recognition from denouncing electricity theft.

Making fraudulent connections and their subsequent detection is only part of the story of electricity theft. The other part centers on how the law confronted this modern crime and the challenges it posed to those in charge of safeguarding private property. Judges, lawyers and legal experts found themselves emerged in the quest of finding legal gaps or technicalities to challenge or defend the applicability of the law as it stood in cases of alleged electricity theft. In doing so, these individuals confronted the difficult task of defining the essence of electricity and debating whether the 1871 Penal Code remained sufficient to deal with new types of criminal activity. Legal experts were not the only ones who sought to interpret the law. As the testimony of many of the individuals charged with electricity theft revealed, the accused sought to frame their statements in terms that would lessen their responsibility, and in doing so; they presented their interpretation of what they considered the rightful use of electricity.

Theft reveals the contradictory ways in which electricity was being adopted. These cases provide a window to explore how the new technology was used and the relationships business owners sought to establish with it. Furthermore, it allows us to consider how the policing of electricity and the criminalization of its inappropriate consumption was not confined to the public space. Fraudulent connections to power lines on the streets were established to power lights, appliances and machinery. Inspectors extended their gaze beyond doorways. In other words, clandestine installations, which physically bridged the public and the domestic, allowed for the surveillance of behavior within private spaces (residential, industrial and commercial). This not only required new

policing strategies but unlike other types of theft, individuals in charge of safeguarding the interests of private companies carried it out.

Crime in the modern city

Scholarship in the past two decades has expanded on law, especially crime and punishment, in the modern Latin America. A number of dissertations, articles and books have explored the law in the transformation of societies.[330] Elite visions of criminality[331] and the policing of public behavior[332] have particularly captured the attention of scholars of Mexican cultural history and provide a colorful rendition of the confrontation,

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[330] For example Lyman L. Johnson, Ed., *The Problem of order in changing societies: essays on crime and policing in Argentina and Uruguay*. (Albuquerque: University of New Mexico Press, 1990); Ricardo D. Salvatore and Carlos Aguirre, eds., *The Birth of the Penitentiary in Latin America: Essays on Criminology, Prison Reform, and Social Control, 1830–1940* (Austin: University of Texas Press, 1996); Carlos A. Aguirre and Robert Buffington, Eds., *Reconstructing Criminality in Latin America* (Wilmington: Scholarly Resources, Inc., 2000); Sueann Caufield, *In Defense of Honor: Sexual Morality, Modernity, and Nation in Early-Twentieth-Century Brazil* (Durham: Duke University Press, 2000); Carlos Aguirre and Gilbert M. Joseph, Eds., *Crime and Punishment in Latin America: Law and Society Since Late Colonial Times* (Durham: Duke University Press, 2001);Kristin Ruggiero, *Modernity in the Flesh: Medicine, Law, and Society in Turn-of-the-Century Argentina* (Stanford: Stanford University Press, 2004); Robert Buffington and Pablo Piccato, Eds., *True Stories of Crime in Modern Mexico*. (Albuquerque: University of New Mexico Press, 2009); Amy Chazkel, *Laws of chance Brazil's clandestine lottery and the making of urban public life*. (Durham, NC: Duke University Press, 2011).

[331] Ricardo Pérez Montfort, Alberto del Castillo Yurrita, and Pablo Piccato, *Hábitos, normas y escándalo: prensa, criminalidad y drogas durante el porfiriato tardío*. (México, D.F.: Ciesas, 1997); Robert Buffington, *Criminal and Citizen in Modern Mexico* (Lincoln: University of Nebraska Press, 2000); Pablo Piccato, *City of Suspects: Crime in Mexico City, 1900-1931* (Durham: Duke University Press, 2001); Elisa Speckman-Guerra, *Crimen y castigo: legislación penal, interpretaciones de la criminalidad y administración de justicia, Ciudad de México, 1872-1910* (México: El Colegio de México, 2002); James Alex Garza, *The imagined underworld: sex, crime, and vice in Porfirian Mexico City*. (Lincoln: University of Nebraska Press, 2007); María Aurea Toxqui Garay, ""El recreo de los amigos." Mexico City's pulquerías during the liberal Republic (1856-1911)," (Ph.D. diss., University of Arizona, 2008); Diego Pulido Esteva, "¡A Su Salud! Sociabilidades, Libaciones y Prácticas Populares en la Ciudad de México a Principios del Siglo XX," (Ph.D. diss., Colegio de México, 2012).

[332] William H. Beezley, *Judas at the Jockey Club and Other Episodes of Porfirian Mexico* (Lincoln, NE: University of Nebraska Press, 1987); William H. Beezley, Cheryl English Martin, and William E. French, Eds., *Rituals of rule, rituals of resistance: public celebrations and popular culture in Mexico*. (Wilmington, Del: SR Books, 1994); William E. French, *A Peaceful and Working People: Manners, Morals and Class Formation in Northern Mexico* (Albuquerque, NM: University of New Mexico Press, 1996); Juan Pedro Vilqueira Albán, *¿Relajados o Reprimidos? Diversiones públicos y vida social en la ciudad de México durante el Siglo de las Luces* (Mexico City: Fondo de Cultura Económica, 1987); Pamela Voekel, "Peeing on the Palace: Bodily Resistance to Bourbon Reforms in Mexico City," *Journal of Historical Sociology* 5, No. 2 (June 1992): 183-208.

manipulation and appropriation of concepts and values as they played out in the theater of public space. Together they have revealed that far from the omnipresence of the government, the law had always allowed marginal groups to contest, elude and even use it for their own benefit. The law, then, just as the urban space, has been a permanently contested social arena. Pablo Piccato has been crucial in bridging these two by exploring the social and cultural dimensions of crime. As his work demonstrates the confrontation between the orderly plans of urban designers and the life's reality for urban residents over the "proper" use of the city that resulted from the social tensions brought about the city's industrialization and urbanization.[333]

The relationship between the processes of urbanization and industrialization, and criminal activity has been a fertile area of study. The cause célèbres of "El Chalequero," El Tigre de Santa Julia, Maria Villa "La Chiquita," and Miss Mexico, to name a few, have been investigated to display social mores, sexual violence, honor, criminology, and press coverage, among others.[334] Besides individual cases, the construction of the criminal "type," or class, has also been associated as part of the processes of

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[333] In particular his manuscript *City of Suspects: Crime in Mexico City, 1900-1931* (Durham: Duke University Press, 2001) based on his dissertation "Criminals in Mexico City, 1900–1931: A Cultural History" (Ph.D. diss., University of Texas at Austin, 1997); and his articles "Urbanistas, Ambulantes, and Mendigos: The Dispute for Urban Space in Mexico City, 1890-1930," in Carlos A. Aguirre and Robert Buffington, Eds., *Reconstructing Criminality in Latin America* (Wilmington: Scholarly Resources, Inc., 2000), pp. 113-148.

[334] See Robert M. Buffington and Pablo Piccato, "Tales of Two Women: The Narrative Construal of Porfirian Reality," *The Americas* 55:3 (Jan., 1999), pp. 391-424; Pablo Piccato, El Chalequero' or the Mexican Jack the Ripper: The Meanings of Sexual Violence in Turn-of-the-Century Mexico City," *Hispanic American Historical Review* 81:3-4 (2001), pp. 623-65; Elisa Speckman Guerra, *Crimen y Castigo: Legislación penal, interpretaciones de la criminalidad y administración de justicia, Ciudad de México, 1872-1910* (Mexico, D.F.: El Colegio de México y Universidad Nacional Autónoma de México, 2007); Robert Buffington and Pablo Piccato, Eds., *True Stories of Crime in Modern Mexico*. (Albuquerque: University of New Mexico Press, 2009); Michele Jeanine Mericle, "Imaginings at the Judas Tree: The Pardon Tales of "Miss México,"" (M.A. thesis, The University of Arizona, 2003); James Alex Garza, *The imagined underworld: sex, crime, and vice in Porfirian Mexico City*. (Lincoln: University of Nebraska Press, 2007).

industrialization and urbanization.[335] In regards to crimes against property, the 1891 sensational robbery of La Profesa jewelry shop, proved a useful window to look at the intersection of consumption, modernity and crime.[336] Nevertheless, little has been said about the ways in which the introduction of technology altered the urban nature of crime.[337]

At the turn of the twentieth century, social commentators joined in claiming that a plague of robbers had descended upon the metropolis and that they were all members of the lower classes. The recognized penologist Demetrio Sodi, for instance, asserted "servants, as well as workers and artisans are generally thieves," and to confront them, "the Federal District government had felt the need to apprehend them during civic festivities or great religious celebrations as a precautionary measure."[338] Following the classifications developed by the famous Italian criminologist Cesare Lombroso, jurist Miguel Macedo stated in 1897 that Mexicans could be classified in three categories: "individuals wearing plain shirts were the lowest class, followed by those who wore

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[335] See the following works by Pablo Piccato, "Cuidado con los Rateros: The Making of Criminals in Modern Mexico City," in Carlos Aguirre and Gilbert M. Joseph, Eds., *Crime and Punishment in Latin America: Law and Society Since Late Colonial Times* (Durham: Duke University Press, 2001), pp. 233-272; and "El paso de Venus por el disco del sol": Criminality and Alcoholism in the Late Porfiriato," *Mexican Studies/Estudios Mexicanos*, Vol. 11, No. 2 (Summer, 1995), pp. 203-241.

[336] See chapter 6 from Steven Blair Bunker, "Creating Mexican Consumer Culture in the Age of Porfirio Díaz, 1876-1911," (Ph.D. diss., Texas Christian University, 2006).

[337] For a study of urban growth, industrialization and criminal patterns in Buenos Aires see Julia Kirk Blackwelder, "Urbanization, Crime, and Policing: Buenos Aires, 1880-1914," in *The Problem of order in changing societies: essays on crime and policing in Argentina and Uruguay*. (Albuquerque: University of New Mexico Press, 1990), pp. 109-122.

[338] Demetrio Sodi, *Nuestra Ley Penal: Estudios prácticos y comentarios sobre el código del Distrito Federal de 1o de Abril de* 1872, Tomo II (Mexico, D.F.: Imprenta y Fototipia de la Secretaria de Fomento, 1907), p. 8.

jackets and, at the top of the scale, the group that used frock coats."[339] Indeed, this classification was embraced in prison regulations.[340] Most of the *ladrones de luz* (electricity thieves), unlike the common perception of *rateros* (thieves) who hailed from the lower classes, wore jackets and few even wore frock coats.

The following discussion on electricity theft relies on court cases from the *Tribunal Superior de Justicia del Distrito Federal* (the city's appellate court) brought against small business owners. These cases had already been adjudicated in courts of first instance, and were appealed by one party. The legal record provides additional opinions espoused by defenders, prosecutors and representatives of the judiciary system. In other words, the appeals offer a longer paper trail of the ways everyday citizens interacted with electricity.

Los Ladrones de Luz

El Popular, in its coverage of the Torres's case, stressed that the confirmation of the sentence had to be made public to discourage electricity theft. The decision had little effect among the city's growing population as reports of the crime continued to make headlines. The crime failed to generate the public attention and anxiety provoked by the wave of *rateros* and careless *mataristas* that threatened city life. No study of *ladrones de luz* examined them as members of a particular criminal class. Little is known about what this theft entailed, who were the individuals involved and how it was ultimately detected.

Large-scale hydroelectric projects undertaken by foreign capital at the turn of the twentieth century contributed to the country's burgeoning industrialization. In particular,

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[339] Cited in Pablo Piccato, "Cuidado con los Rateros: The Making of Criminals in Modern Mexico City," in Carlos Aguirre and Gilbert M. Joseph, Eds., *Crime and Punishment in Latin America: Law and Society Since Late Colonial Times* (Durham: Duke University Press, 2001), p. 243.

[340] Ibid, 264.

the establishment of the Mexican Light and Power in 1902 and the breaking ground for the Necaxa hydroelectric system the following year placed Mexico City in a privileged position over other regions in the country. Electric energy undercut former sources of energy, including hydraulic power dependency.[341] The availability of more and cheaper electric energy allowed the capital city to offer advantages to both established and new industries. These factors, along with greater communication and transportation services, resulted in the increased industrial production taking place in Mexico City.[342]

The electrification of factory work increased industrial output while reducing both the cost and time of production. This transformed the city's physical nature by enabling the expansion of industrial life to take place in the city center instead of in the scattered hamlets around the Federal District.[343] Until the 1870s water-powered textile factories, for instance, had remained dispersed in industrial towns on the outskirts of the Federal District in Tlalpan, Contreras, San Ángel, Santa Fé, Chalco and Tlalnepantla. The traditional textile and tobacco industries were particularly transformed by the electric power and the introduction of electric machinery. In the textile industry, this meant the drastic reduction of hand weavers and small businesses that lacked the means to acquire the new machinery.[344] The latter also gave way to the establishment of corporations and

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[341] For a discussion of hydraulic sources used for industrial purposes see Ernesto Galarza, *La Industria Eléctrica en México* (Mexico, DF: Fondo de Cultura Económica, 1941), pp. 56-60.

[342] For a detailed discussion of the city's industrialization process see Gustavo Garza Villareal, *El proceso de industrialización en la Ciudad de México (1821-1970)*. (Mexico, DF: El Colegio de México, 1985), particularly chapter v "Los sistemas ferroviario y eléctrico como génesis de la elevada concentración industrial en la ciudad de México (1876-1910), pp. 97-137.

[343] Tony Morgan, "Proletarians, Politicos, and Patriarchs: The Use and Abuse of Cultural Customs in the Early Industrialization of Mexico City, 1880-1910," in William H. Beezley, Cheryl English Martin, and William E. French, Eds., *Rituals of rule, rituals of resistance: public celebrations and popular culture in Mexico*. (Wilmington, Del: SR Books, 1994), pp. 151-171.

[344] Garza Villareal, 120.

the emergence of larger factories. In 1877, for instance, there were six textile factories in the Federal District employing approximately 900 men, 300 women, and 220 children.[345] The number of these factories doubled by 1910, occupying 5,088 workers, while production increased five times.

Although the emergence of modern factories made inroads in some industrial sectors, these remained numerically unimportant in terms of labor, representing a mere 4% of the city's work force in 1910. More important was the transformation of the nature of work in semi-mechanized workshops. Electrical power, new machinery, and new workshop organization resulted in large-scale production by unskilled workers performing menial labor, and eliminated the need for traditional artisan work.[346] Small and medium-sized workshops remained in operation, but many crafts came to be dominated by a few companies that had been organized around large, semi-mechanized workshops.

These companies placed great pressure on the smaller enterprises and traditional artisan work. The concentration and deskilling experienced in various crafts represented consequences of the introduction of new technology. This brought advantages and disadvantages for small and medium-sized business owners. With the introduction of machinery unskilled workers could perform tasks that had been previously carried out by craftsmen. The shrinkage in labor costs was obviously dependent on being able to afford the machinery in the first place and the energy to operate it. This also placed artisans in a precarious position as their craft was being undermined by the advent of technology.

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[345] John Lear, *Workers, Neighbors, and Citizens: The Revolution in Mexico City*. (Lincoln, NE: University of Nebraska Press, 2001), p. 59.

[346] Ibid, 62-6

Striking artisans in 1907, for instance, were admonished by bakery owners that they could be easily be replaced with unskilled workers.

Electric companies brought the prevalence of cases to court. Businesses, of all sizes, ranked third after the electric streetcar company and the federal district government (for public lighting) as consumers of electric power. Residential consumption, on the other hand, remained relatively weak the first three decades of the twentieth century. Businesses had an incentive to use "special cables," among other mechanisms to reduce electric bills. Another factor that explains the greater incidence of business owners charged with electricity theft was until 1914 most residential cases of theft were settled outside the courts.

A wide gamut of businesses engaged in electricity theft. On the top of the list were hotels, theaters and factories that employed electricity to light and power large establishments for extended periods. One of the largest thefts involved the Monte Carlo and Salón México theaters. Carlos Paliza, the inspector of the MLP, one of the company's most astute and active inspectors, had been entrusted with finding out why the electric meters of these two theaters were reporting suspicious levels of consumption. After staking-out the theaters for some time, Paliza caught an electrical worker, Ignacio Nápoles, in flagrante making the needle of the electric meter at the Monte Carlo run backwards.[347] Confronted by Paliza, Nápoles admitted the theater paid him four pesos a week for the procedure, while the owner of the Cine Mexicano paid him five pesos for the same practice. The electrician claimed that all theaters in the city engaged in it. The

[347] "Por mas de $200,000 fue defraudada la Compañia de Luz: Dos dueños de cines quedaron presos," *El Diario*, 24 August 1913.

owners of both theaters, Emilio Ibarra and Ángel Gutiérrez, were arrested and faced fines of 200,000 pesos that the MLP had estimated as the amount of the fraud.[348]

Factories, which used great amounts of power for extended periods to move countless types of machinery, also engaged in questionable energy-saving mechanisms. Rodolfo Schuzandubel, manager of the Compañia Mexicana de Electricidad, accused Mateo Rodríguez and Francisco González owners of "La Michoacana" factory, a tobacco company, of theft.[349] Given that the company had recently suffered several cases of theft, the manager visited the tobacco factory to carry out an inspection. Although the factory had a contract with his company, it was only for lighting and not for power. He noticed that cables illegally connected to the company's line were powering the machinery.[350]

Theft was also suspected and eventually proven at the internationally recognized "La Velocitan" leather tannery.[351] Paliza, the inspector of the MLP, approached the *Ministerio Público* (Office of the Public Prosecutor) to report what was taking placed at the factory. He had become suspicious after comparing the power needed to run the factory's machinery and that reported by the meter installed to record energy consumption. For him theft was evident. The mechanism to defraud the company was discovered during an inspection of the tannery. After the first round of declarations, the manager, Juan Caffarel, the technical director, Eugenio Heinrich, and one of the mechanics, Reyes Granados, were sent to jail.

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[348] *El Diario*'s coverage of this theft was labeled as "alarmist" by *El País*, as the estimate for the defrauded amount was eventually dropped to a mere seventy-eight pesos. See "Cien mil pesos que se reducen a setenta y ocho," *El País*, 38 August, 1913.

[349] "Robo de Fuerza Eléctrica: Los dueños de una fabrica acusados," *El Imparcial*, 26 April 1903.

[350] "Acusación contra una fabrica," *El Tiempo*, 26 April 1903.

[351] Archivo General de la Nación, Tribunal Superior Judicial del Distrito Federal, Box 0565/File 102030/year 1906. (hereafter cited as AGN-TSJDF)

It had been four years since the twenty-four-year old Reyes Granados had been hired and placed in charge of the factory's electric engines. Under the instructions of Juan Caffarel, the new manager, Granados had performed a special daily operation about 20 to 22 days every month since September of the previous year. The operation consisted of taking out the cable connection from the meter to the transformer, preventing the meter from registering the power that moved the tannery's machinery. The mechanic declared Paz Villagaña, a former factory employee, who had provided him with a set rubber gloves and electrical pliers that belonged to the factory and were to be used for the special operation, had trained him. Villagaña, who until last September had been in charge of the special maneuver, had to train Granados as he had fallen ill, and eventually died. Granados admitted that Villagaña had also provided him with a book to keep track of the power recorded by the meter every month, that way they could more or less calculate to spend the same quantity. He was unable to provide the book as evidence as he had misplaced it. As a "reward" for the operation, he received ten pesos a month from Caffarel.

Juan Caffarel, a thirty-year-old French citizen and the manager of "La Velocitan" corporation since September of 1905, denied any involvement or knowledge of the operation. It had been only when the police arrived to the factory that he learned about it. He denied instructing Reyes on the operation and said he did not recognize the gloves and pliers as belonging to the company. Caffarel did acknowledge that he had been paying Granados ten pesos a month, but the "custom" of rewarding him was already in place when he arrived to head the factory and the bonus was just a way of compensating him for "cleaning engines."

Justino Gibaux, a French tanner employed at the factory, admitted he had "heard, but did not remember from whom," that the connection between the electric meter and the transformer was disconnected. Only on the previous day, when the police arrived that he saw where the operation was performed and learned that it had been Granados who did it. The technical director, German citizen, Eugenio Heinriche, had been in the tannery for seven years. The factory's engines had previously used steam, but in the last three or four years that they had began to employ electricity. Two mechanics, Gibaux in charge of the machinery used for manufacturing leather goods, and Granados responsible for electric engines, did not report directly to him. When called to ratify his original statement, Granados declared there were only two individuals who knew of the operation: Caffarel and an individual by the name of Andres, who had left the tannery about three months before.

Fig. 14. Booking photographs of Juan Caffarel (left) and Reyes Granados (right)
Source: Archivo General de la Nación, Tribunal Superior Judicial del Distrito Federal, Box 0565/File 102030/year 1906.

As the responsibility for the tannery's electrical theft was being disentangled at court, the *Oficina Electro-Técnica Mexicana* was commissioned to inspect the factory's electrical installation and estimate the amount of income the MLP had lost. The concluding report included a diagram that illustrated exactly how the fraud had been committed. The red line (see figure 15 below) represented the cable Granados

disconnected, which in turn prevented the meter from working properly. The meter, in order to function correctly, needed a two-phase connection. Eliminating the cable prevented the meter from registering the energy consumed without impeding the operation of all engines.

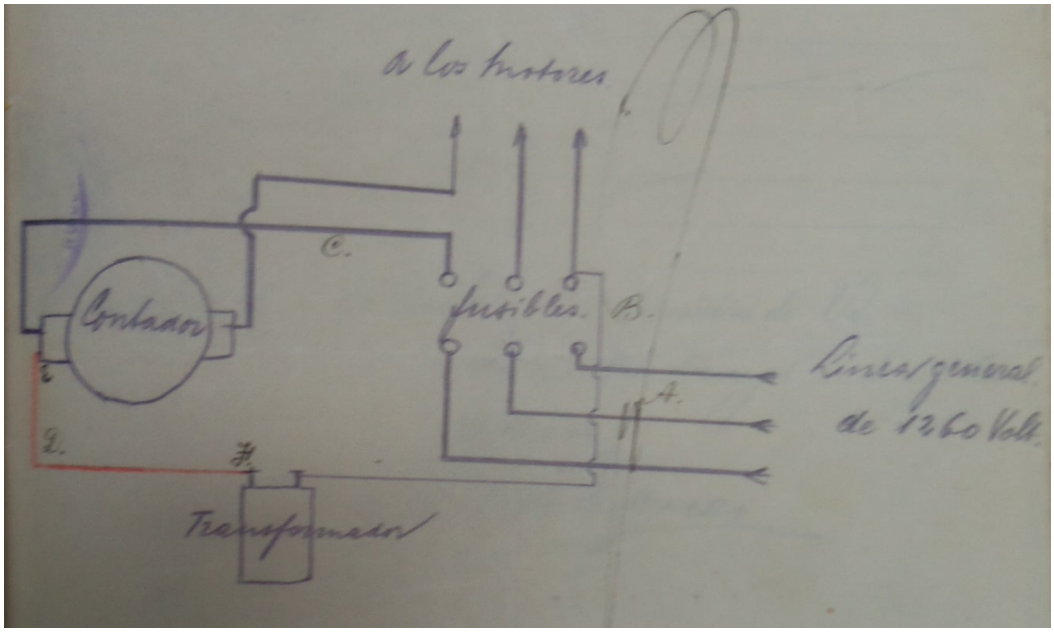

Fig. 15. Diagram of the special connection at "La Velocitan."
Source: Archivo General de la Nación, Tribunal Superior Judicial del Distrito Federal, Box 0565/File 102030/year 1906.

F. R. Grutter, the electrical expert designated to evaluate the amount defrauded, provided the board of directors of "La Velocitan" and the MLP with a detailed report that set the amount at 43,455 pesos. Within a week, the tannery had settled up the amount. Charles H. Cahan, manager of the MLP, satisfied with the payment dropped any further action against the tannery. This did not mark the end of the court case against the factory's employees.

Three months after charges of theft had been brought against Caffarel, Heinriche, and Granados, the Ministerio Público issued an indictment. Heinriche had been absolved earlier in the judicial process based on the declarations of Granados and Gibaux that he

had had no participation or knowledge in blocking of the meter. The judge set Caffarel free declaring that his responsibility in the theft "had not been proven." Granados did not share the same fate. He was found guilty of having illegally taken a certain quantity of electric power to benefit the tannery. He had done so, read the indictment, by preventing the meter to register properly.

The court received word that Granados, who had not appeared at court for the indictment hearing, had fallen ill with pneumonia. The hearing was rescheduled, but once again the accused made no appearance. On June 29, the court personnel gathered at Granados' tenement house, where they found him bedridden and gave him notification for the sentencing. On the same date, a local daily announced the death of Juan Caffarel. The funeral rites had been celebrated the previous day and his body had been laid to rest at the Panteón Francés, the cemetery reserved for the well to do.[352]

At the sentencing hearing, Granados's lawyer argued for the acquittal of his client because that he did not personally profit from the alleged crime. The judge convicted Granados for "unspecified fraud" and delivered a sentence of a one thousand pesos fine or one hundred days in jail. The judge granted permission for the fine to be paid on installments. Not a cent of the fine was ever paid. According to his death certificate, on the wee hours of July 3, a mere day after the sentence was read, Granados died from pulmonary tuberculosis. His body, unlike the esteemed Caffarel, was laid to rest in the Panteón Dolores, the city's largest public cemetery, in a sixth-class grave. Criminal action against him ended.

[352] *El Correo Español,* 29 June 1906.

Medium-sized businesses charged with stealing electricity included cantinas, bakeries, corn mills, and various commercial houses in the city. Electric energy consumption in these establishments was far below that used by factories and large establishments. Rather, medium-sized establishments used the energy to power one or two engines, and light a small circuit of incandescent lamps. Electric consumption was a new expense owners needed to take into account, one that became particularly disputed as businesses wrestled to remain afloat in the midst of an economic downturn and the armed struggle that plagued the country. The added expense was particularly felt by businesses that were under fierce competition, such as Corn mill owners.

Molineros

Carlos Paliza had been informed that at a molino on San Antonio Abad Street a mechanism installed in the meter was preventing it from recording the establishment's consumption of electric energy. Roberto del Villar, the mill owner, and his niece Dolores, and his business partner, Esteban Castillo, were taken to the Belen jail on charges of electricity theft.[353] Roberto was the sole proprietor of the molino administered by Dolores, and co-owner with Esteban of a second molino on Chabital de Monserrate Street. Aware that del Villar owned a second molino, Paliza carried out an inspection finding a connection of two incandescent lamps, whose consumption was not being registered by the meter.

Cases of theft in multiple establishments owned by the same individual were common. It was standard procedure that once theft had been suspected, or indeed proven, at a business, any additional properties by the same owner were also inspected to verify

[353] AGN-TSJDF/Box 0491/File 087193/year 1906.

whether similar practices were in place. Damaso de la Concha, for example, who owned "La Villa de Arriendas," a grocery store-cantina on Calzada de la Viga, and "Las Montañas de Solórzano" a grocery store on Jamaica Street, was charged with using similar maneuvers in both establishments to defraud the MLP.[354]

Electric companies in the city had been pushed to maintain a strict surveillance to undercut the frequency of electricity theft. *El Popular* claimed that the vigilance of company employees had found many cases of theft, among which were the molinos owned by del Villar.[355] Commenting on the case, *El País* explained that via a "special cable," the molino had been making greater use of electricity than that recorded by the meter. Such a cable was easy to install, the daily added, that theft had become fairly common and accusations against many merchants and industrialists abounded.[356]

Tomás Sánchez was another mill owner who came under suspicion. Inspector Alfonso Gómez had stopped by the San Antonio mill on Pueblita Street to examine the meter when he noticed that one of the fuses was missing. He believed it had been intentionally removed to interrupt its proper function.[357] When confronted, Sánchez claimed that three days earlier, an individual carrying a sack of maize had accidently fallen against the apparatus, sending the fuse to the floor, and no one had time to replace it. Manuel Aviera, a Spanish citizen and friend of Sánchez, backed up the story. Aviera had bought a number of maize sacks but without room at his store, had begged his friend

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[354] See AGN/TSJDF/Box 0506/file 088733/year 1906; and "Robo de Electricidad," *El País*, 16 October 1906.

[355] *El Popular* followed this case closely publishing several articles on its development, 23 April 1906, 24 April 1906 and 27 April 1906.

[356] "Querella de una Compañia: un industrial acusado," *El País*, 23 April 1906.

[357] AGN-TSJDF/Box 0746/File 131627/year 1908.

to store them at the molino. The sacks had been stored in a pile that almost reached the ceiling in the room that housed the engine. A few days later, he had sent a handyman, with a cart driver, to pick them up.

Inspector Gómez argued that based on the Molino's energy consumption for the last couple of months, he believed the MLP had been defrauded by 1089 pesos. Sánchez claimed the drop was explained by the competition his molino was facing, and not theft. A year before his molino had been the only one in the area and consequently business was good. Aware that a number of individuals had plans to open mills around the area, he had approached the MLP's lawyer to let them know that if the company provided electric power to these, it would be extremely detrimental to his business. The lawyer assured him that the company would not service those projected mills.

Sánchez's maneuver to keep competition at bay was illustrative of common business practices among mill owners. In the last years of the Porfiriato and during the early phase of the revolution, molinos dramatically increased in number. In 1913, 72 mills operated in the Federal District, a number that nearly doubled within a decade. By 1915, the Compañia Mexicana Molinera de Nixtamal, the Spanish-owned company established during the Porfiriato, had concentrated ownership with 100 of the 130 established mills.[358] The monopoly was accelerated as military hostilities came to an end in the next decade.[359] The Spanish-owned company claimed 119 mills of the 147 in

[358] Lear, 65.

[359] Flour mills were also controlled by handful of merchants. For a thorough study of bread see Roberto Weis, *Bakers and Basques: A Social History of Bread in Mexico*. (Albuquerque, NM: University of New Mexico Press, 2012).

operation in 1923.[360] Concentration had been possible thanks to close connections between a few merchants and high-level officials. Mill owners bribed government officials to drive up the cost of municipal licenses required for a molino in the Federal District, discouraging new investors. Bribes were also used to secure special licenses needed in order to open new molinos within steps of successful ones.[361]

The MLP lawyer's alleged promise was short-lived. According to Sánchez, shortly after their meeting, the company held a meeting regarding the provision of electric power to mills in the area. Company leaders not to give a monopoly on electric power to a few owners, and decided to provide it to whoever requested it. Four mills had been established then in the area. As a result, work at his molino had been reduced and consumption of electric power had dropped accordingly. The drop Gómez noticed in the last couple of months had been a direct consequence of commercial competition and not theft. To verify Sánchez's argument, the court began an investigation to determine the number of recently established molinos in the area. The investigation confirmed that a three molinos had been opened in the last two years.[362] When approached, all three owners asserted that excessive competition had significantly reduced their workload, and their consumption of electric energy.

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[360] Dawn Keremitsis, "Del metate al molino: la mujer mexicana de 1910 a 1940," *Historia Mexicana*, Vol. 33, No. 2 (Oct.-Dec., 1983), pp. 292-293.

[361] Ibid, 295.

[362] Molino Luna, owned by Joaquín Villa, had opened two years before on the 2nd street of Luna; Molino "El Rayo" on the 12th street of Zarco owned by Miguel García, nine months before; and one owned by Jesús Contreras on the 7th street of Santa María.

Fig. 16. Tomás Sánchez, mill owner accused of electricity theft.
Source: AGN-TSJDF/Box 0746/File 131627/year 1908.

Neither Gómez nor any other MLP employee commented on the alleged broken agreement. But such an agreement was one of the ways by which two or three companies came to control the industry dependent on electric power during the late Porfiriato.[363] Perhaps once the arrangement with the MLP failed, Sánchez resorted to theft to keep his business afloat. Other elements that came up during the hearings provide a window into some of the common business practices of the day.

According to his statement, after Gómez had confronted the mill owner about the missing fuse, Francisco García, a Spanish citizen and owner of "El Leon de Oro" grocery store on Guerrero Street, arrived at the molino. He invited Gomez and two other MLP employees to a nearby cantina for drinks. They accepted and once in the cantina,, García asked him to dismiss Sánchez's case handing him ten pesos. He said Sánchez would give him an additional five pesos. Gómez accepted the ten pesos but claimed he had notified the MLP about it. Later that night, he went back to the molino where he found six electric

[363] According to Keremitsis, two or three mills with connections to high level government officials installed and controlled electric energy sources. See Keremitsis, 286.

lamps, four of which were on. This caught his attention as light service had been disconnected since June of the previous year. When asked about the lamps in court, Sánchez acknowledged he had indeed been using them and claimed he had paid several months for their use. He only stopped paying because he had not been billed for them. About a year before, electric service for these lamps had been interrupted, but it had been reestablished after he talked to the MLP's lawyer, who had fined him ten pesos for the reconnection. If needed, Sánchez claimed he had proof of payment. The lamp question was dropped and the case against Sánchez centered on the alleged meter fraud.

Although Gómez's bribery accusation was ignored, the likelihood of bribery to cover up electricity theft is not far-fetched. Electric company employees had technical skills and surveillance responsibilities that placed them in a privileged position and protecting the company's interests was not always their motive. The bribery accusation, should not be dismissed, but rather taken as one of the methods used by entrepreneurs to cover up less than ethical business practices.

The Sánchez case is one of the lengthiest both in terms of the number of individuals that were called to testify and the judicial proceedings that took place before a verdict was reached.[364] The court ordered a reconstruction of the alleged incident in which the cart driver knocked down the fuse with a maize sack. This was an effort to determine the force that was needed to knock the fuse from its location, and whether or not the fuse was correctly protected in the first place. Seven months after the case had been opened, court personnel gathered inside the mill along with *peritos eléctricos* (electric expert witnesses), provided by both sides (the MLP and the accused), to observe

[364] "El robo de luz eléctrica: importantes diligencias," *El País*, 4 November 1908.

whether the fuse could have been accidentally removed. Carlos Ortiz and Fernando Corona, the *peritos* appointed by the Ministry of Justice, said that given the type of fuse in question, and the height at which it was placed, it needed no protection and therefore they believed neither of the sides were responsible for what had happened. Juan Espejel and Guillermo Arrington, the *peritos* appointed by the accused, disagreed. They believed the Company had to protect fuses against accidental or intentional disconnections.

Towards the bottom of the hierarchy of *ladrones de luz* we find a plethora of small grocery, dairy, diners, drug stores, diners, hair salons, tailor, shoe, mechanic and butcher's shop owners. Direct involvement in the daily operation of their businesses became essential as competition intensified with the steady expansion of the merchant class during the second half of the Porfiriato. Merchants, the second largest census category after domestic service, almost doubled from 19,000 in 1895 to 30,000 by the end of the regime.[365] As small businesses proliferated they came into conflict with monopolies, gradually losing political, social and economic control over their enterprises.[366] Modest establishments, unlike medium-sized businesses, were primarily run by owners or with the help of immediate family members, or a handful of employees. Given the precarious survival-rate of small businesses, owners studied expenses carefully. Establishing safe and professional electric installations, signing formal

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[365] Lear, *Workers, Neighbors, and Citizens* 56.

[366]Ibid, pp. 55-58. For foreign merchants, see Jürgen Buchenau, *Tools of progress: a German merchant family in Mexico City, 1865-present*. (Albuquerque: University of New Mexico Press, 2004); William Schell, *Integral outsiders: the American colony in Mexico City, 1876-1911*. (Wilmington, Del: Scholarly Resources, 2001); María del Carmen Collado, *La burguesía mexicana: el emporio Braniff y su participación política, 1865-1920*. (México, D.F.: Siglo Veintiuno Editores, 1987); and Steve B. Bunker, *Creating Mexican Consumer Culture in the Age of Porfirio Díaz*. (Albuquerque: New Mexico University Press, 2012).

contracts with electric companies and paying for energy consumption were actions that not everyone was willing to undertake.

The actions taken by Enrique Lara illustrate one of the most common ways in which theft took place in small businesses. Lara, who owned a diner along Callejón del Garrote, had signed a contract with the MLP for the installation of several electric lamps. A few months later he asked for to stop the service.[367] Once the connection had been interrupted, Lara secretly reestablished communication.[368] The inspector who discovered the unofficial reconnection believed Lara had been stealing electricity for about six months, estimating its value at over 200 pesos.

Unlike other types of crimes electricity theft could go undetected for months and even years. When caught stealing merchants oftentimes tried to make a case for the recent nature of their questionable connections. The case of a young dairy store owner, for example who for a long time had worked in several dairy shops in the city and had saved enough capital to establish his own shop along Reloj Street[369] arranged various licenses and contracts, including for light service. Having everything arranged, the young merchant planned the inauguration to coincide with the Feast of Corpus Christi. At five in the morning of the long-awaited day, as music was playing, the dairy shop was finally inaugurated. Regular sales were made during the day, but as night approached and the need to light up the establishment came, the young merchant became exasperated as the connection between his shop and MLP's line had not been established. Although he had

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[367] *El Imparcial*, 27 April 1906.

[368] Among the first cases reported was that of a small coffeehouse of "disputable reputation." "Robo de luz," *El Imparcial*, 17 December 1902.

[369] "Curiosa inauguración," *El Popular*, 30 June 1906.

he did have authorization, he decided to make the connection himself. Not half-an-hour passed with the establishment had been illuminated, when a MLP employee stopped by and asked to see the contract. Instead, the young merchant lavishly praised the splendor of electric lighting and the installation itself. When his words failed to distract the employee, he argued he had already notified the company and that the contract was on its way. Given that a contract could not be rendered, the merchant was taken to the police station.

Policing electricity

The establishment and expansion of factories and workshops within the city limits brought a dangerous combination of hazardous material and flammable substances in close proximity. This along with machinery capable of exploding made the existence of faulty electrical wiring an eminent threat. In 1907 the MLP estimated about 3,000 commercial and residential houses at risk of suffering a fire disaster.[370] According to a Mr. Cahan, the MLP representative, business owners put themselves in harm's way by carrying out their own electrical installations or hiring someone, whose credentials could not be verified, to do them. Based on a list compiled by company inspectors, 3,000 houses out of the total 30,000 MLP clients had dangerous electrical installations. The company had sent letters to those subscribers warning that their connections were faulty and explaining they could make considerable savings if corrected. Only three hundred clients contacted the company and these, Cahan explained, were already seeing savings.

Cahan asserted that so many cases existed of electricity theft it would fill to overflowing Belen jail, so the company only charged those consumers for whom there

[370] "Hay en México millares de casas en peligro de incendio: Las instalaciones eléctricas defectuosas: Los clientes pagan de más pudiendo pagar lo justo," *El Imparcial*, 27 December 1907.

was substantial evidence of the crime. The company worked out individual settlements with those who defrauded the company *sin dolo* (without malice). He said in the preceding months, inspectors had reportedly discovered more than 300 theft cases, among them a handful of major ones involving three large hotels and an important factory, and at the time hundreds of criminal accusations were pending.

Los inspectores

In late 1901 Gabriel Ortiz, representative of the MLP, asked Ministerio Público authorities for help in locating the fraudulent connections on Vergara Street. As the number of cases increased, the company could no longer wait for the authorities to investigate possible theft cases, instead, they had to become more aggressive in detecting fraud and, consequently, prosecuting those responsible. By 1907, uncovering theft had become one of the MLP's regular activities and the exclusive task of the Inspectors' Department. This department coordinated thirty-five inspectors who on a daily basis walked the streets with their eyes fixed on the lines that crisscrossed the city. Secret inspectors or informants aided them.[371]

Inspectors made regular inspections of overhead power lines, night rounds, as well as unannounced visits to commercial and residential houses to check for illegal hook-ups into power supply lines, unauthorized reconnections or meter tampering maneuvers to avoid recording electricity usage. Line inspections revealed at least two ways in which theft took place. Because of their public nature, unofficial hook-ups were the easiest to detect. This basic method of stealing electricity consisted of running a direct wire-connection to a main power route passing by one's house or shop. Inspectors could

[371] Ibid.

spot a rudimentary connection between an establishment and the company's power line in the street. Unauthorized use of electricity was quickly verified if the owner of the establishment could not show a copy of a service contract—as happened to the young merchant caught on the inauguration day of his dairy shop.[372] Because the rudimentary connections could easily be made, some could go undetected for days, months or even years. Pedro González, who owned a tailor shop on Corpus Cristi Street, powered his shop by tapping into the power line for six months before being discovered.[373] Due to their primitive nature these connections were often an eminent threat to the owners of commercial and residential houses where theft was taking place as well as to their neighbors. For instance, Francisco Torres's installation in his hotel Ambos Mundos was found to be dangerous to the lives of guests and the building, which could have burned down as the wires were making contact with tapestries, ceilings and bed canopies.[374] One faulty installation that did catch fire was in a hair salon near Santa Ana. A circuit had been created to tap into the power line destined for a nearby drugstore using bell wire, a wire used only for low-current, low-voltage applications. When an inspection discovered the connection, it was learned that a few nights before earlier the ceiling had gone up in flames.[375]

Making unauthorized reconnections was another form of theft. It was rather common for theft to take place when former clients of an electric company decided to unilaterally make a reconnection either themselves or by having someone else do it for

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[372] "Curiosa inauguración," *El Popular*, 30 June 1906.

[373] "Robo de Luz," *El Popular*, 5 April 1908.

[374] "Robo de Electricidad Eléctrica: Cateo en un hotel," *El Imparcial*, 19 December 1901.

[375] Ibid.

them. Rita Arias, for instance, had been a MLP client until late October of 1906 when service was disconnected for non-payment. For the next two weeks, every night she would sling a *gancho de hierro* (metal hook) over a nearby power cable and run a wire from the hook to her home.[376] Early in the morning she hurried to take the *gancho* down to elude the watchful eyes of inspectors. Mrs. Arias' maneuver was only discovered when one morning she forgot to take the *gancho* down.

Illegal reconnections were commonly made by individuals who took over commercial or residential leases in establishments wired for electric service but where service had been discontinued, so the transfer of commercial and residential property gave rise to cases of theft.[377] A person, as Cahan explained, would request electrical service. When the contract was signed, the client would use some else's name. The client would occupy the property for one or two months, and then transfer it to a new tenant who, finding the electric service in place, used of it under the impression it was included in the lease. At the end of the month, the company's collector would bring a bill addressed to the previous tenant. Given that the new tenant had neither signed a contract nor was the service in his name, he refused to pay. This free electric service caused the company to lose money.

Acquiring a business could also bring unforeseen trouble when questionable electric connections were in place. Such a situation resulted in the case against the administrator and the former owner of "La Providencia" pastry shop.[378] In early February

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[376] "Robo de Energía Eléctrica," *El Imparcial*, 4 November 1906.

[377] "Hay en México millares de casas en peligro de incendio: Las instalaciones eléctricas defectuosas: Los clientes pagan de más pudiendo pagar lo justo," *El Imparcial*, 27 December 1907.

[378] AGN-TSJDF/Box 913/File 159912/year 1909.

1909, electricity for the pastry shop owned by Rafael Mancera was disconnected for non-payment. A month later, the shop was transferred to Ignacio Vega who left it under the administration of Francisco Cereso Ruiz. Inspector Paliza heard a rumor that the pastry shop was using electricity without the knowledge of the MLP. To confirm the report he made a nocturnal inspection and found the shop illuminated by electric lights. Cereso Ruiz, the shop assistant, argued that Vega had acquired the shop from Mancera with electric service payments up-to-date, but without an electric meter. In his initial declaration, Mancera stated that when the shop was under his ownership there had been a problem with the meter that had recorded over forty-eight pesos in service, which he disputed and did not pay. Consequently, MLP employees took away the meter and stopped the connection between the shop and the company's lines. When they did so, they had left two exposed wires.

Fig. 17. Anthropometric charts for Francisco Cereso Ruiz and Rafael Mancera
Source: AGN-TSJDF/Box 913/File 159912/year 1909.

When called to ratify his declaration, Mancera added that when the electric meter was taken he was told that it would be tested to make sure it worked properly. No one

returned as promised, so with lights for work, one worker named Domingo suggested they could connect the exposed wires and just pay for the electricity used. Domingo reestablished the connection. Ten days later Vega took over the shop and Mancera said he told him the situation. Mancera added he had never refused to pay for the electric power consumed, but he had not received the amount owed. When asked about Domingo, Mancera said he did not know his last name and that he and four deliverymen had taken some money and left the shop. He reiterated that neither he nor any of the other workers touched the exposed wires. He said he was willing to pay for the energy his shop had consumed during those ten days.

In the face-off between Mancera and Cereso Ruiz, the latter added that Vega had indeed been to the MLP's offices to straighten out the shop's electric service. There he was notified of Mancera's outstanding balance that had to be paid before a new contract could be written to renew service. As the settlement between the two parties was pending, Vega ordered his employees to continue the use of electric service at the shop. Although the new pastry owner had not made a court appearance, the Ministerio Público asserted the case against both Mancera and Cereso Ruiz showed they were consequently convicted of theft charges.

Jesús Paredes was another recently established merchant who became caught up in a legal case. The twenty-two-year old owner of "La Suerte" diner on Plazuela de la Palma had been accused in August 1907 by Carlos Paliza of committing electrical theft to light five incandescent lamps in his establishment.[379] Paliza claimed a connection existed between the diner and the company's power lines on the street; an official connection had

[379] AGN-TSJDF/Box 643/File 113625/year 1907.

been disconnected a few months earlier for non-payment when somebody else owned the diner. The inspector could not determine when the connection had been reestablished. In his initial statement Paredes claimed the diner had only been opened for eight days. The connection, he admitted, had been made by an electrician whose name and whereabouts he did not know. On the day the diner was opened, he explained, he was busy fixing an oil lamp when a stranger suggested electric lighting instead. He offered to make an immediate connection and to take care of the necessary contract with the electric company. All of that for a five pesos fee. Paredes acknowledged he had agreed to it because he believed him, and that he himself had not contacted the company beforehand because he did not know whether he was going be given the license to open the diner. He only paid the stranger two pesos for the reconnection, plus meals. That was the last time he saw him. Four months into the case, he informed the court he had closed "La Suerte" diner and had opened another one on a different side of town.

The simple methods such as that of the *gancho* used by Mrs. Arias, as well as the little effort needed to connect to power lines allowed for widespread illegal reconnections, which meant inspectors were in a constant state of alert. Line inspections during the day were coupled with night rounds. After dark, inspectors walked the city looking for bright electric lights where there should not be any. Gabriel Abrego, who along with Carlos Paliza, was one of the most active inspectors bringing *ladrones de luz* to the authorities, walked by the residence of Miguel Palacios at night when he noticed there was an electric light inside the house despite the fact that about a month before service had been interrupted due to non-payment. Brought to the police station to answer

Abrego's complaint of theft, Palacios acknowledged he had reconnected the wires that same night because he was hosting a dance at his house.[380]

As darkness brought with it the need for artificial lighting night rounds served not only to catch individuals making unauthorized use of electricity but it also allowed inspectors to verify cases of suspected theft. Inspector Manuel Rodríguez Miramón had made an inspection during the day of the residence of Federico Jah, a German citizen, on Patriotismo Street.[381] The maid who answered the door claimed the house did not have electric service as the meter had been removed and only the cables had been left hanging. Rodriguez Miramón was allowed in the house and on examination suspected theft based on the ease with which a reconnection could be made. To verify his suspicion he went back to the house after 10pm accompanied by another MLP employee and three gendarmes. He notified the maid who came to the door that he wanted to check the electric light installation. After some time the maid came back to inform the inspector that the lady of the house had denied him entrance since her husband was not at home. The inspector alerted his group to watch how candles were being lighted inside the house as the electric lights that had been turned off. A similar turn of events occurred when inspector Alfonso Tovar knocked on the door of Enriqueta Ruiz's house on the second block of Hidalgo. He noticed an electric light that was lit in one of the rooms when he walked by the house around 8pm. He asked the maid for permission to carry out an inspection of their electric service, which she denied they had.[382] Tovar along with the two gendarmes he had called as witnesses noticed how as the electric light was turned off

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[380] "Iba a comenzar el baile," *Nueva Era*, 6 June 1912.

[381] AGN-TSJDF/Box 1118/File 198038/year 1912.

[382] AGN-TSJDF/Box 1297/File 226252/year 1915.

and quickly candles were lit. The maid returned to notify them that Mrs. Ruiz could not come to the door as she was sick.

There were several types of electric energy service available for individuals willing to sign formal contracts. One could either request light, heat or power service, or a combination of them. In terms of service, the contract was made based on the number of electric lights anywhere from an individual incandescent bulb to as many as the client requested. The contract clearly stipulated the client could use only the number of lights in the contract. Prohibition existed for using electricity for anything other than what the contract indicated. In practice these stipulations were oftentimes overlooked, which constituted a form of theft.[383] For example, Agustín Alarcón, who owned a tailor shop and who had contracted service for an electric light,[384] instead used the power an iron. When reported to the authorities, Alarcón secured the legal services of Don Alfonso Márquez, who called for an electrical expert witness to determine whether or not the iron consumed more electricity than the light during the same period of time. The results of the test proved that indeed the light consumed more energy than the iron, and thereby no electricity had been stolen. He also explained that Alarcón had been paying for light service, and when using the iron he had to take the light bulb out of the socket in order to plug in the iron, so he could not use both at a given time. Charges against the tailor shop owner were eventually dropped. Librada Lara de López faced a similar case as she had a contract for heating service, but used it for several lights. The estimated difference in cost

[383] As in the case of "La Michoacana" tobacco factory that had a contract for light service, but also used it for power. *El Imparcial* and *El Tiempo*, 26 April 1903.

[384] *Nueva Era*, 7 June 1912.

was over six hundred pesos, which Librada refuted. She argued that only at time of press need had she used a single lamp for just a few hours.[385]

Other cases developed in which individuals had approached the MLP to secure electric energy service and for whatever reason, no formal contract had resulted. This did not stop individuals from making their own the connection to the company's lines.. Guadalupe Martínez, for instance, who owned a business on Calle de Vidal Alcocer, ended up at Belén jail for setting up a fraudulent connection. He explained that oil lamps only provided faint light and that he had too much debt to pay for incandescent lighting, he had connected it to the company's overhead power lines without a permit.[386] As Martínez had done, many business and residential owners were unwilling to pay to have one of the electric companies make an installation, and instead did it themselves. Francisco Torres, the hotel owner, who believed he could save the installation cost by setting doing up himself. This did not constitute something illegal until they began using the electricity without a contract. Miguel Berumen, accused of theft by the MLP, confessed that having finished the installation at his house, he went ahead to connect it to the cables belonging to the company just to test using electricity.[387] In a similar case, Magdalena D. Hortas hired an electrician to connect it to the company line just and tested to make sure it worked correctly.[388]

In most cases when illegal connections were discovered, the owners claimed unknown persons had been responsible. Jesus Paredes, the owner of "La Suerte" diner,

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[385] "Por robo de luz," *Nueva Era*, 30 March 1912.

[386] *El País*, 27 May 1906.

[387] AGN/TSJDF/box 381/file 67615/year 1905.

[388] AGN/TSJDF/box 1469/file 260451/year 1918.

claimed an electrician whose name and whereabouts he did not know had offered him electric service. Cristóbal Rubio maintained that an individual who introduced himself as Federico Brown, and who claimed to work for one of the city's electric companies, had offered to set him up with electric service.[389] The installation had been made, and according to Rubio on a monthly basis he had been paying Brown directly for the energy he used.[390]

Brincadores y Diablitos - Tan inmóvil como una estatua

One reason for client reticence against inspections was the introduction of electric meters. Electric lighting had been initially contracted based on the number of lamps in use, but this had changed with the introduction of meters that recorded the amount of electricity used by the client. Although this innovation had been initially welcomed, once adopted it had not been to everyone's liking. Unsatisfied clients claimed that their monthly electric bills varied despite the consistency of their energy consumption. This gave rise to complaints on the accuracy of meters. Unresolved disputes often reached the courts, as in the case the MLP brought against J. Torres and Manuel Antuñano, owners of "La Empacadora" factory.[391] The electric company brought a suit for the outstanding balance of 495.63 pesos the factory had incurred in light service. The factory owners, who had signed a meter contract for 100 lights of 55 watts, disagreed on the amount they had been billed because it did not represent the light service they had consumed. In their initial response to the action against them, the owners argued that they had communicated to the company that the calculations that there was an error with the meter.

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[389] "Otro robo de luz eléctrica: el acusado preso," *El Popular*, 5 July 1903.

[390] "Otro robo de luz," *El País*, 4 July 1903.

[391] AGN/TSJDF/Box 783/File 138985/Year 1908.

Cahan, the MLP representative, speaking about customer reluctance to the introduction of meters challenged arguments based on meter error claiming the problem lay on faulty wiring and not on the meters themselves. A meter, he explained, worked constantly to register consumed energy. Endless cases of poor and faulty wiring in the city had pushed his company to create an inspections department, but people had failed to understand that inspections were to their benefit.

Authorized customers employed several methods of meter tampering to pay less for their energy consumption. The most basic method used a *brincador* (bypass) cable, a wire that bypassed the connection between the input terminal and output terminal of the meter. As a result the electric meter could not be register electrical usage. Often meters with brincadores resembled the one Pancracio Arceiba, a MLP inspector, found at a cantina on Calzada del Rastro: "immobile as a sculpture."[392] José Ramirez owner of a barbershop on 13th Calle de Guerrero was caught using one of those brincadores to lessen the charges for the energy his business. Other shops camouflaged the brincadores by using them sporadically. That had been the case of the leather tannery "La Velocitan," where Granados used it only about 20 to 22 days out of the month. A similar case was that found at a commercial house where everyday after 10 pm when the establishment closed its doors, a brincador was installed to prevent the meter from recording the energy used overnight.[393]

Sporadic use of brincadores made it difficult for inspectors to detect them. A telling case was that of an electrical goods store on the corner of San Felipe Neri and

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[392] "Robo de Luz Eléctrica," *El Popular*. 9 August 1908.

[393] "Robo de Luz Eléctrica," *Nueva Era*, 31 January 1913.

Isabel la Católica.[394] Not only were two electric motors connected outside the meter used to test the accessories sold at the shop, but a connection between the store and a hotel had been made to illuminate the sign of a nearby hotel. The sign had been lighted free of charge for two years. Detecting the use of brincadores required the vigilant eyes of inspectors in combination with unannounced inspections. Inspectors Léopoldo Fernández and José Saldaña carried out a nocturnal inspection to the house of Manuel Castro, where they suspected a brincador was in use.[395] They arrived to Castro's house at 9 pm along with a gendarme. The inspectors told the gendarme that if upon introducing themselves the lights were turned off, that would provide proof a brincador was in use. A woman came to the balcony to receive them, but after she learned the reason of their visit, she went back inside. The lights were then turned off and immediately turned back on before opening the front door. The inspectors confronted her and requested she hand over the brincador or explain the interruption the lights had suffered. She refused their requests.

Rarely did anyone admit fraud or sign a confession. Nevertheless, in the case against Alberto Rojas, for instance, inspector Edmundo Enriquez secured both a signed confession from the widow Trinidad G. de Rojas and the brincador itself, which he turned over to the Ministerio Público.[396] Although Mrs. de Rojas admitted to the use of the brincador cable, she pointed out it had been placed the day before. The inconclusive paper trail of this case ends here. Other documents report the fate of Esteban Ruiz, a Spanish citizen who owned "La Esperanza" grocery shop where a brincador was found.[397]

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[394] "Sensacional querella por robo de energía eléctrica," *El País*, 4 March 1914.

[395] AGN/TSJDF/Box 1591/File 285122/Year 1920.

[396] AGN/TSJDF/Box 1587/File 284433/Year 1920.

Inspector Gabriel Abrego presented charges against Ruiz and the brincador cable found at his grocery shore (see the drawing of the installation; Fig. 18), as well as a signed confession (Fig. 19). The judge found Ruiz guilty of theft and sentenced him to two months in jail.

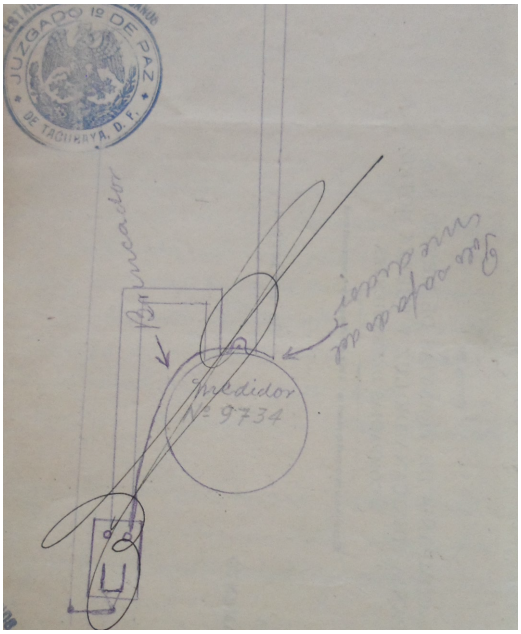

Fig. 18 Drawing of the installation

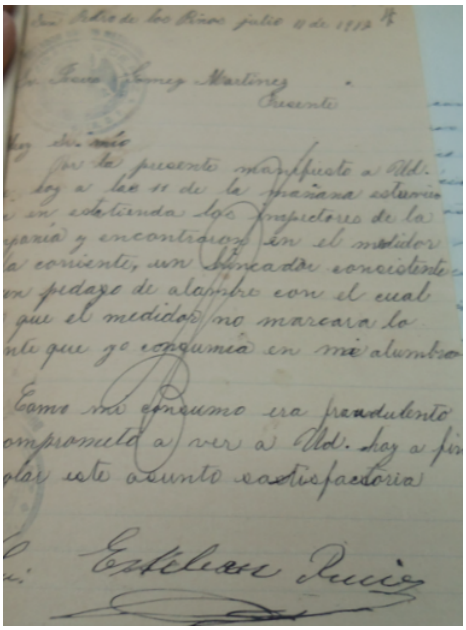

Fig. 19 Signed confession letter

Source: AGN/TSJDF/Box 1407/File 248651/Year 1917

Brincadores just as in the case of fraudulent installations and reconnections were often placed by house or business owners themselves, or by their employees. Esteban Castillo, for instance, promised Roberto del Villar, his business partner, he would fix the meter so he would pay less for electric service. Granados, the mechanic employed at the leather tannery, had been trained by a former employee to connect a special device, receiving a compensation for doing it. Electricians and individuals who claimed to be, sold or bartered their electrical skills. Cristóbal Rubio, for instance, claimed that a German electrician by the name of Federico Brown had made out an installation at his house. The anonymous electrician who offered to set up electric service at the diner had

[397] AGN/TSJDF/Box 1407/File 248651/Year 1917.

had collected two pesos and meals. In another case, electrical skills were bartered for services, Manuel Herrera y Olvera, owner of the drugstore "La Salud" in Tlalpan, had been a MLP client for over seven years when inspector Gabriel Abrego made an unannounced visit to his establishment, which revealed the use of a brincador.[398] Herrera y Olvera first tried to justify the drop in energy consumption with a recent Zapatista assault, which had forced him to close the establishment's doors. He later admitted that about three or four years before he had been called to the house of Enrique Gavito, whose wife was sick. Having no money to cover his fees, Gavito offered to compensate him by reducing his cost of electricity. The drugstore owner claimed nothing happened because he never saw Gavito again, and he would not have allowed it as it constituted a crime. Charges against Herrera y Olvera were eventually dropped after electrical experts declared that no electricity fraud had been committed, as the connection for the brincador had not been properly installed.

Other forms of meter tampering included the removal of fuses and the drilling of holes to manipulate them without actually opening them. In the review of the cases for the first two decades of the twentieth century, only two discovered. The case against mill owner Tomás Sánchez is the only one in which a business owner was accused of having removed a fuse to interrupt a meter's proper function, meanwhile the mill owner Roberto del Villar was the only case in which a meter had had a hole the size of the head of a pin drilled in its upper part. Reversing the dials, a procedure far more complicated and one that also required expert skill, was less frequent. Ignacio Nápoles, the electrician caught in flagrante reversing the dials of the meter at the Monte Carlo theater, admitted he

[398] AGN/TSJDF/Box 1185/File 207147/Year 1913.

received a weekly payment from two theater owners to carry out the procedure. Nápoles claimed it was a common practice among all theaters in the city.

Nueva Era exposed the most sophisticated method of meter tampering. According to the daily's investigation a former MLP employee, whose last name was Palmer, had invented an apparatus that could work in any electrical installation that had a meter. The apparatus was a miniature transformer known as the "Palmer transformer" among electricians and baptized as *diablitos* by "dishonest clients."[399] Once installed in a meter this apparatus made it run backwards, so instead of registering the consumption of energy, it lowered the recorded amount. Unethical clients had employed hairpins or magnets to tamper with the company's meters, but those tricks were quickly discovered as those practices promptly broke meters down. Inspectors Julio Manuel Muñoz and Felipe E. Paniagua had discovered the use of this apparatus at a hardware store in the area of Guerrero. When they arrived to carry out an inspection, the owner's nephew naively explained to them how the apparatus worked. He claimed his uncle had cleverly installed a *diablito* in the attic so the electric company would not charge him much. The inspectors were in the midst of inspecting it when the uncle arrived and violently tried to remove the diablito. In a quick reaction inspector Muñoz struggled with the shop owner over the device, which he eventually secured, but failed to hold the uncle who hastily escaped. In a similar case, with a different turn of events, inspector Gabriel Abrego discovered a diablito at the inn owned by Julio Rendón. Accompanied by a gendarme, Abrego managed to stop Rendón from fleeing disguised as a woman.[400]

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[399] "Descubren gran fraude á la Cía. de Luz y Fuerza: Hacían caminar los medidores hacia atrás para que marcaran menos consume," *Nueva Era*, 21 November 1911.

[400] *El País,* 16 November 1912.

In their pursuit of diablitos, inspectors held relative power over contracted and illegal customers of electric energy. As both fines and jail time were possible outcomes of theft cases, inspectors had real leverage over the immediate future of those deemed responsible. In the case brought against Antonio Vázquez Suárez, the MLP had learned that for sometime an individual had been going around offering and installing "combinations" in the meters in the area of El Chorito, to prevent these from recording the energy consumed. Inspectors Ignacio Magaña and Manuel Rodríguez Miramón, who had been assigned the task of locating brincadores that had been bought and installed, allegedly came across one of these at the house belonging to Vázquez Suárez. Upon discovering the device, Rodríguez Miramón had remained at the site to make sure it was not removed, while Magaña went out to find two gendarmes so they could bear witness to its existence.[401] According to Magaña's statement, they had learned that Vázquez Suárez was the individual who made and sold the brincadores at a rate of seventy-five cents each. Vázquez Suárez, who had been arrested after an inspection by court personnel, maintained he knew absolutely nothing about lighting nor did he have any electrical knowledge. Furthermore, he argued that if a brincador had been actually found in his meter, one of the inspectors could have easily place it before calling the gendarmes. He suspected it had been Rodríguez Miramón as they have had serious falling-outs in the past.[402] Besides, he claimed, there was no need for such a device as lighting was only used for half an hour every night when they returned home. A new inspection, he sustained, would prove that there was no commercial equipment or a bathroom, kitchen, irons or electric heaters that demanded electricity.

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[401] AGN/TSJDF/Box 1143/File 203598/Year 1912.

[402] "Lo acusan de robo de luz eléctrica," *El Tiempo*, 4 July 1912.

At court Rodríguez Miramón and the accused, the former stated he had never met Vázquez Suárez and that although at the moment he could not the court with a list of names and addresses of those who bought brincadores from the accused, he could actually prove that he was indeed the individual that had been selling them in the area. Vázquez Suárez argued they had known each other for some time and denied the inspector's allegations on the sale of brincadores. The charges were nothing else than revenge against him. To prove the latter, two character witnesses testified that the inspector and the accused had known each other for years and they had been rivals in a love affair. Vázquez Suárez was eventually released as the corpus delicti had not been proven and Rodríguez Miramón had failed to prove the names and addresses of those he claimed had bought brincadores from the accused.

Although no clear picture exists of the individuals who made a living from electricity theft, enough evidence exists to prove that from early in the twentieth century a growing market opportunities abounded for anyone make illegal connections and install meter-tampering devices. Cases indicate that competent individuals whether mechanics, electricians, current or former electrical employees, or merely those who had acquired some ability sold or bartered their skills. Often these individuals had been trained as employees of electric companies.

El Delito

Theft as defined by Article 368 of the 1871 Penal Code constituted "the appropriation of *una cosa mueble* (movable property) without right or without the consent of its legitimate owner."[403] Electricity theft was initially prosecuted under this

[403] 1871 Penal Code, Article 368.

article, but mounting challenges and criticism to its applicability raised calls for reform. In an editorial *El Imparcial* argued that although the Penal Code had been an efficient, adaptable and philosophized body of rules when issued, it no longer met the development of modern life.[404] Civilization, the editor added, had brought a diversity of crimes unknown until recently. Among these was electricity theft, which the code did not specify. The article concluded that the Penal Code was no longer effective for a society that had been completely transformed, and thereby, code needed reform.

The prosecution of electricity theft cases under the code's articles was challenged primarily on two intertwined grounds: the fact that it was not prescribed by any penal law, and whether or not electricity was movable and corporeal. Jacinto Pallares, one of the most prominent jurists of the Porfiriato and the attorney who led Francisco Torres' *solicitud de amparo* (a request for immunity], the owner of the Ambos Mundos hotel, claimed that although his client's actions had indeed been reprehensible, they were not violations of any penal law.[405] He argued that applying Article 368 to his client's case violated Constitutional Article 14, which prohibited interpretative judgment of penal laws, and directed that penal law should be applied in an exact manner. That is, for an act to be considered felonious and punishable, it had to be included in the literal, exact, precise and unequivocal terms of the penal law. As defined by Articles 368 and 370, theft constituted the appropriation of someone else's *cosa mueble*, and theft was perpetrated at the moment in which the thief stole, that is had, item in his hands. Given the legal

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[404] "El Código Penal y las Nuevas Sociedades: El Robo y la Civilización," *El Imparcial*, 4 July 1904.

[405] Jacinto Pallares authored the study entitled *El robo de electricidad*, which was reproduced in its entirety by Demetrio Sodi in *Nuestra Ley Penal: Estudios prácticos y comentarios sobre el código del Distrito Federal de 1o de Abril de* 1872, Vol. II (Mexico, D.F.: Imprenta y Fototipia de la Secretaria de Fomento, 1907), pp. 19-38. Sources that mentioned the study do not provide the exact date it had been written, but it had to have been in 1903, while Pallares was leading Torres' defense.

precept, Pallares asked whether it could be possible for a thief to indeed have the electricity in his hands, or for a thief to handle a current that shocks, often knocking down the careless or stupid individual.

Judge Ismael Elizondo, who had tried the case against Torres at the court of first instance, supported the applicability of those articles based on his consideration of electricity as a *cosa mueble*.[406] In his judgment, in a legal sense *cosas* (things) and *bienes* (properties) were synonymous, and constituted all of those that made up a man's estate.[407] In the case of electricity, Elizondo explained, whether it was called fluid, current, energy, or what have you, no one could deny that thanks to the century's prodigious progress and man's activities, he had been able to imprison it between his hands using it as a lucrative force in industry and home. It was no longer a matter of debate, he concluded, whether electric current was a thing, that it was commercialized, and thus susceptible to appropriation. It was also incontestable that it could be transmitted and transported from one place to another, regardless of the medium employed, and thereby it had to be regarded as movable.

Pallares challenged Judge Elizondo's definition of electricity as a *cosa bien*. For there to be theft, the jurist contended, it was necessary for a thing to be subject of being grabbed. Indeed, before the item subject to theft met the criteria of being movable, it had be susceptible of being handled. In other words, it had to have a physical body that could be isolated, dispersed, individualized, and that could become independent of other bodies.

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[406] The ruling was reprinted in *Diario de Jurisprudencia del Distrito y Territorios Federales*, 20 January 1904, Vol. I, No. 17, and 21 January 1904, Vol. I, No. 18. It was also published in its entirety, "Los robos de Luz Electrica: Una Sentencia que debe ser conocida para prevenir los delitos," *El Popular*, 7 April 1903.

[407] *Diario de Jurisprudencia del Distrito y Territorios Federales*, 1 January 1904, Vol. I, No. 18.

There was no theft in terms of the law, he reasoned, unless the item passed from the possession of its legitimate owner to the possession of the individual who committed the crime. Furthermore, the essence of theft consisted in claiming and exercising through its physical seizure, the rights of the legal owner. Simple physical seizure did not constitute theft, but rather it required a seizure that took the item away from the possession of the owner to the possession of the thief. Only the physical seizure, subtraction or delocalization could meet the fundamental description of theft as defined in Articles 368 and 380 of the Penal Code. Jurist Demetrio Sodi, who argued that two cardinal elements had to be present to constitute theft, supported Pallares' stance.[408] First, the object had to be seized, the substance of the crime, from the possession of the owner without the latter having it handed over voluntarily or getting rid of it by error or fraud. Second, the object taken by the thief had to be a movable object.

Given electricity's nature, Pallares found it inconceivable to think it was possible for one to dispossess electric current by the mere act of connecting the wires of the electric company with the installation of the individual who inappropriately uses the current. He underlined that in such cases the electric current remained under the "full and absolute possession" of the electric company that generated it because the company could at any time suspend, reduce, withdraw, or cut service. Thereby, he concluded, given the physical nature of electricity, its physical dispossession, the essence of theft, was impossible.

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[408] Demetrio Sodi, *Nuestra Ley Penal: Estudios prácticos y comentarios sobre el código del Distrito Federal de 1o de Abril de* 1872, Tomo II (México, D.F.: Imprenta y Fototipia de la Secretaria de Fomento, 1907), pp. 13-

Despite Pallares's detailed challenge to Elizondo's interpretation, the appellate court upheld the sentence and denied the *amparo*.[409] Calls for reform in the case's aftermath did not decline but rather intensified. Judge José Saavedra argued that despite the arguments concerning the penal code, the definition of theft had endured, even though did not perfectly apply to electricity theft.[410] Issued in 1871, he added, the authors of the Penal Code could not even imagine electric lighting could exist, and thereby, the corpus could not have legislated what did not exist. In the midst of the advancements brought about by progress, they had yet to legislate on the matter. There was an absolute need, the judge concluded, to take this type of theft into account and provide the necessary regulations to prevent it. On the opposite side of the debate, there were those who believed electricity theft was indeed included and penalize in the 1871 Code. Judge Enrique Peña y Aguayo was one of them but considered that to avoid "twisted interpretations" and doubts that could surfaced, it was convenient to add a special article under the chapter of theft to punish those responsible for such crimes.[411]

A consensus crystallized as the reform project developed. Prosecutors and jurists called for moderate changes to the articles that had until then regulated theft. Public Prosecutor Francisco Cortes claimed that a simple change to article 368 was enough to regulate electricity theft. He proposed a simple addition of the phrase "theft is committed by who appropriates someone else's corporeal or incorporeal thing, without right and

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[409] The ruling was reprinted in the *Diario de Jurisprudencia del Distrito y Territorios Federales*, Vol. I, No. 21, 25 January 1904; and Vol. I, No. 22, 26 January 1904.

[410] "Estudios Jurídicos: Proyectos de reformas al Código Penal, opinión del Sr. Juez 3º Presidente de debates, Lic. D. José Saavedra," *Diario de Jurisprudencia del Distrito y Territorios Federales*, Vol. II, No. 85, 11 August 1904.

[411] "Estudios Jurídicos: Proyectos de reformas al Código Penal, opinión del Sr. Juez Presidente de debates, Lic. Enrique Peña y Aguayo," *Diario de Jurisprudencia del Distrito y Territorios Federales*, Vol. II, No. 82, 8 August 1904.

without the consent of the lawful owner."[412] Salvador Ferrer, another prosecutor, suggested adding a new statement to article 381 that punished with eighteen months in prison the wrongful use of electric current.[413] Judge Emilio Tellez stressed the need to either include a new article or to broaden the article that defined theft to prevent acts, which regardless of their criminal character were being pushed as merely civil ones.[414] Public defender José R. del Castillo recommended suppressing the word *mueble* from Article 368.[415] He also called for harsh punishment as he considered theft to be reaching alarming levels. Not only did sentences needed to be raised in his view, but also among others, all sentences over a year were to be served in penitentiary colonies and once released the inmate had to take residency away from the urban center and placed under police surveillance.

Ironically, from their contrasting perspectives both Elizondo and Pallares agreed on the need for reform. Judge Elizondo, who had argued for the applicability of current articles to cases of electricity theft, later recognized that to avoid controversies as well as to prevent the crime which had been referred to as "new" and which threatened to become more frequent, an article had to be added in order for the definition of theft to

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[412] "Estudios Jurídicos: Proyectos de reformas al Código Penal, opinión del Sr. Agente del Ministerio Publico, Lic. Francisco Cortes," *Diario de Jurisprudencia del Distrito y Territorios Federales*, Vol. I, No., 20 July1904.

[413] "Estudios Jurídicos: Proyectos de reformas al Código Penal, opinión del Sr. Agente del Ministerio Publico, Lic. Salvador Ferrer," *Diario de Jurisprudencia del Distrito y Territorios Federales*, Vol. II, No. 76, 1 August1904.

[414] "Estudios Jurídicos: Proyectos de reformas al Código Penal, opinión del Sr. Juez 5º Correccional, Lic. Emilio Tellez," *Diario de Jurisprudencia del Distrito y Territorios Federales*, Vol. II, No. 84, 10 August 1904.

[415] "Estudios Jurídicos: Proyectos de reformas al Código Penal, opinión del Sr. Defensor de Oficio, Lic. José R. del Castillo," *Diario de Jurisprudencia del Distrito y Territorios Federales*, Vol. III, No. 14, 17 September 1904.

include the pillaging of all currents and fluids, incorporeal and intangible.[416] That way, Elizondo concluded, the interests of companies and individuals would be guaranteed. Pallares pointed out that in the case of water, the most movable and easiest thing to move from one place to another, an independent article, Article 445, had to be created to regulate it.

The addition and modification of articles to the Penal Code related to electricity theft were seen as a welcome step toward filling the legal vacuum that had been causing serious disruptions to the public order.[417] This vacuum had allowed harmful actions that the legal community generally believed merited severe punishment in a cultured society, in which the criminal had either received light punishment or had escaped it entirely. *El País* claimed the reforms had corrected it and those responsible were being punishment.[418] Demetrio Sodi, who had supported Pallares's critical stance against the application of Article 368 to electricity theft cases, claimed the reforms stood as proof that electricity theft had not been included in the aforementioned article.

Sin querer queriendo

In the aftermath of the Torres case, defense lawyers rarely attempted arguing the defense of electricity theft on the basis of a legal vacuum. The appeal of Don Delfino Villa's case in late 1903 was one of those few.[419] Instead, defense arguments commonly centered on either the non-malicious intention of those who established illegal

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[416] "Estudios Jurídicos: Proyectos de reformas al Código Penal, opinión del Sr. Juez Correccional, Lic. Ismael Elizondo," *Diario de Jurisprudencia del Distrito y Territorios Federales*, Vol. II, No. 1, 1 September 1904.

[417] "Reformas al Código Penal," *El País*, 19 September 1906.

[418] "Querella de una compañía, un industrial acusado," *El País*, 23 April 1906.

[419] "El robo de luz eléctrica," *El Popular*, 22 November 1903.

connections or on the fact that the accused had not being the actual perpetrator of the crime. Miguel Berumen, for instance, confessed having made a connection with the MLP's overhead power lines to test an electric installation.[420] In doing so, he added, he had only taken electric current for a brief time. Berumen was set free, but the MLP appealed the decision arguing among other things that the accused's confession could not serve as the basis to determine that he had acted *sin dolo* (without malice). If Berumen was not punished for his actions, the representative warned, it would set a precedent for any electrician to make illegal connections to the company lines without incurring punishment as long as he said he had done so without malice.

The 1906 reforms to the 1871 Penal Code included the addition of provision VIII to Article 416 that punished the *intención dolosa* (criminal intent) of electric energy. This opened the door for legal proceedings to focus on the actual perpetration of the crime. Jesus Paredes, owner of "La Suerte" diner, for instance, had accepted the offer from an anonymous electrician to establish electric lighting at his establishment. Paredes was absolved on the basis that he had not made the connection himself, and thereby did not meet the *intención dolosa* required by the law.[421] Punishment for the use of brincadores or diablitos also centered on those who carried out the connections. In the case of "La Velocitan" tannery, criminal charges were filed only against the mechanic, Reyes Granados, who had confessed to tinkering with the electric meter, while the manager, Juan Caffarel, walked free. Granados's lawyer unsuccessfully demanded the absolution of his client claiming that although he had been the perpetrator, he had not personally

[420] AGN/TSJDF/box 381/file 67615/year 1905.

[421] AGN-TSJDF/box 643/file 113625/year 1907.

taken advantage of the defrauded electric energy.[422] Tomas Sanchez, the owner of the mill with the meter with a missing fuse, who benefitted from its "accidental knocked over," was absolved as it could not be proven that he had removed it with the intention of defrauding the company.[423] In the case against Alberto Rojas, his wife declared the brincador found at the meter had been installed the day before and that she did not know the harm that it could bring to them.[424]

Ascertaining the intention behind fraudulent installations had become the essential component in these cases. Those who admitted to being the perpetrators of illegal connections oftentimes tried to undermine the intentionality of their questionable actions. Torres, the owner of the hotel, for instance, admitted he had made the connection to test the electrical installation with the intention of subsequently contacting the electric company, something he forgot to do. Similarly, the commercial establishment who lighted the electric sign of a nearby hotel for two years and connected engines outside the meter also claimed it had been an "involuntary oversight."[425] Unlike the oversights claimed by business owners as the reasons behind illegal installations, residential owners alluded to "special circumstances." Librada Lara López, for instance, had been caught using energy for lighting purposes although her contact was exclusive for heating. López claimed she had only done so once, due to "urgent need," and only for a few hours.[426] After a questionable connection of 25 lights was found at the house of Efrén Vilchis, he

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[422] AGN/TSJDF/box 565/file 102030/year 1906.

[423] AGN-TSJDF/box 0746/file 131627/year 1908.

[424] AGN-TSJDF/box 1587/file 284433/year 1920.

[425] "Sensacional querella por robo de energía eléctrica," *El País*, 4 March 1914.

[426] "Por robo de luz," *Nueva Era*, 30 March 1912.

declared that lacking the necessary illumination for a dance he was hosting, he accepted the offer two individuals had made to establish the temporary installation.[427] Concepción Delgado, who found herself in a similar situation, asked Nicólas Sánchez to run a connection from his commercial establishment to the room she occupied in a nearby house so she could use three electric lights for a get together with friends she was hosting. In her declaration, Delgado admitted that although she had only used a single light, there had not been "criminal intent" and that she did not know that what she had ordered constituted a crime.[428] Likewise Miguel Palacios carried out an illegal reconnection at his house because a dance was about to start.[429]

In a number of cases in which owners, both of commercial and residential houses, responded to accusations of theft with scenarios in which they were offered connections by anonymous individuals who either introduced themselves as independent electricians or employees of electric companies. In other words, in their declarations owners explained their actions within contexts they believed placed them within the law. Cristóbal Rubio claimed that when he needed electric lighting, he had made arrangements with an electrician to set-up the connection and had been paying him directly for his monthly service.[430] Rubio later clarified that it had been Federico Brown, a German electrician, who had created his connection.[431] Likewise Jesus Paredes maintained that an anonymous electrician had not only offered to replace the oil lamps at his diner with

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[427] "Criminal contra Vera Ignacio por el delito de robo," *Diario de Jurisprudencia del Distrito y Territorios Federales*, Vol. V, No. 99, 24 August 1905, pp. 785-788.

[428] AGN/TSJDF/box 1401/file 247414/year 1917.

[429] "Iba á comenzar el baile," *Nueva Era*, 6 June 1912.

[430] "Otro robo de luz," *El País*, 4 July 1903.

[431] "Otro robo de luz eléctrica, el acusado preso," *El Popular*, 5 July 1903.

electric lighting, but also had assured him he would arrange the contract with the electric company. Vicenta Castañeda, who owned a small shop on the 6 street of Mesones, explained that about a month before a client of hers said she could make use of electric lighting at the establishment if she bought an electric bulb.[432] Subsequently, the client himself had bought and installed the lamp for her. She had notified the owner of the locale who had promised to contract the service. Magdalena D. Hortas argued the electrician called to test an installation had established the questionable connection at her house.[433]

Individuals accused of theft oftentimes included and even implicated anonymous individuals in their version of events. Tomas Sanchez claimed an anonymous cart driver had been the one responsible for knocking out the fuse that was missing from the meter at his mill. His anonymity made it impossible for Sanchez to provide his whereabouts. Jesus Paredes faced the same problem, as he knew neither the name nor whereabouts of the electrician who had stopped at his diner on the day he opened for business. Ambrosio, the employee in charge of a corn mill in Coachilco, declared that "some individuals," whose whereabouts he did not know, had helped him to establish a connection to run additional mills.[434] In the case of "La Providencia" bakery, allegedly it had been Domingo, a former worker whose last name was unknown, who made the illegal reconnection. When asked about the whereabouts of Domingo, Mancera said he had no idea since he had left the shop. Manuel Herrera y Olvera, owner of a drugstore in Tlalpan, claimed a former client

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[432] AGN/TSJDF/box 1370/file 242373/year 1916.

[433] AGN/TSJDF/box 1469/file 260453/year 1918.

[434] "$2,300 de fuerza y luz defraudan a la Compañía: Ingeniosa manera de no pagar el consume de energía eléctrica en dos establecimientos," *El País,* 8 October 1912.

of his by the name of Enrique Gavito had offered him a service to reduce his electric bill in exchange for services provided. The service had been described to him as a simple matter of loosening some screws. He claimed it was never performed as he never saw Gavito again and because he would have never allowed it as it constituted a crime.

Besides incriminating anonymous individuals, those charged by the court made an effort to plead their unfamiliarity with electricity and how it worked. Dolores del Villar, manager of her uncle's corn mill, declared she knew energy consumption at the establishment was determined by a "measuring apparatus," but had not seen the cable placed in it because she feared an accident. When asked about the cable, Dolores's uncle confessed that his business partner had offered to fix the meter to lower the electric bill, but he remained "completely unaware" of what this meant. Juana Hernández, who worked at Tomas Sánchez's mill, told the inspector that she knew nothing these electric mechanisms. Primo Delgado, the miller, claimed the MLP employees had stopped by to inspect the machines that made the millwork. In his statement Sánchez confirmed that a cart driver had accidently knocked over the fuse and he had not put it back in place because was afraid of what might happen because he knew nothing about electricity. Antonio Vázquez Suárez when informed about the brincador found in his meter replied he did not understand anything about electrical connections. He also questioned the statements of two gendarmes who saw the brincador because they were not experts and could not tell whether the wire they had seen was used for fraudulent purposes.

As the argument against the applicability of the Penal Code lost steam, individuals accused of theft used their statements to try to undermine their questionable actions. They did so by underlining that their actions had been *sin dolo*; by framing their

actions within a context that covered them in a cloud of legitimacy; by redirecting responsibility towards anonymous or particular individuals whose whereabouts made it impossible for the courts to find them; or by claiming ignorance, and even fear, in matters related to electricity. These efforts did little to exonerate suspects when both the *dolo* had been determined and the corpus delicti had been confirmed.

Confirming the materiality of electricity theft became an intricate process. In earlier cases such as that of Francisco Torres, whose lawyer asked for the absolution of his client based on the fact that the corpus delicti had not been proven. He argued that given that electricity was not a *cosa mueble*; in the strict sense of the word it could not be appropriated. It became common for inspectors who brought later cases to court turned over either the ends of wires used in illegal connections or the brincadores. Inspector Carlos Paliza, for instance, turned over two pieces of wires whose ends had been connected in the shape of a hook inside "La Providencia" bakery. Defense attorneys often challenged the existence of these brincadores. In the case against Vázquez Suárez, it could not be determined where exactly the confiscated brincador was located in the accused's house. So it could not be confirmed that the brincador actually worked to regulate the consumption of electric energy. Since the brincador had been removed, electrical experts could no longer give an opinion on the case. The brincador found at "La Salud" drugstore, although had been left untouched by the MLP inspector, did not fulfill the legal requirements as the corpus delicti. The electrical experts who argued a second wire was missing rendering the brincador useless had determined this. This allowed Herrera y Olvera, the drugstore owner, to avoid conviction.

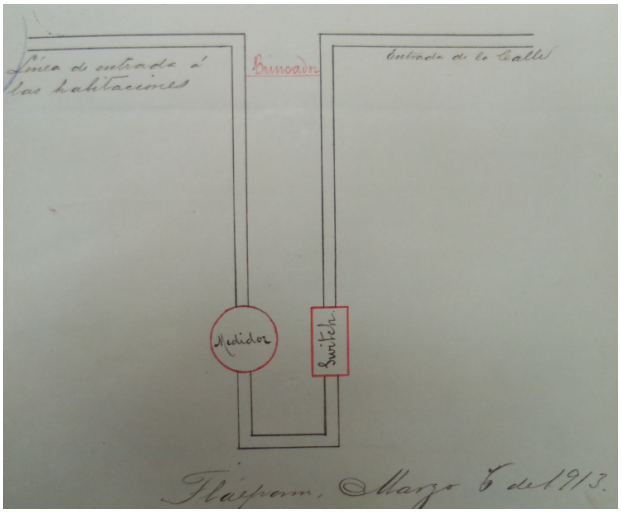

Fig. 20 Diagram of the brincador found at "La Salud" drugstore
Source: AGN/TSJDF/File 207147/Box 1185/year 1913.

Conclusion

By the 1910s, the number of owners of commercial establishments brought to court charged with electricity theft was closely followed by those against residential owners. Faced with an ever-growing number of cases, the MLP vowed to no longer handle any of them outside of the courts. Haro Harrsem, the company's manager, believed the disposition could bring an end to the abuses of individuals who acted in bad faith.[435] Cases of minor importance, which might have otherwise been solved between those responsible and the company, began to reach the courts at higher numbers. Eventually, the company began to demand financial remuneration.[436]

Despite the company's surveillance efforts and the Penal Code reforms, cases of theft continued to proliferate around the city. Although no official estimate of the number of individuals engaging in electricity theft was made, *El Demócrata* believed in 1924 that

[435] "Los que roban la luz eléctrica serán perseguidos," *El Diario*, 15 December 1911.

[436] "Robo de luz," *El Diario*, 22 March 1914.

as much as 80 to 90 percent of energy subscribers used the so-called diablitos.[437] According to them the reason behind their widespread use resulted because of the MLP's "prohibitive rates." The newspaper claimed to have received countless letters that supported the work the Ministries of Industry and Commerce, and Agriculture and Development that demanded the MLP reduce rates. One of them came from distinguished individual who wrote about his recent trip to St. Louis, Missouri. The rates charged by the electric company that serviced this bustling American city, the unidentified individual noted, were considerably less than those found in Mexican cities. No reason explained the difference especially since the national government had granted the magnificent waterfalls for the generation of electricity either for free or for insignificant fees.

The desire to pay less for the use of electricity was at the root of its theft. Admitting it or questioning rates was rarely done by those accused—it happened in only two court cases. Inspectors Gabriel Abrego and Francisco Alzada, for instance, learned Salvador Ruelas had placed diablitos in his meter to "save four pesos."[438] In his statement Esteban Castillo, co-owner of a mill with Roberto del Villar, admitted he had connected two lamps outside the meter as a response to the exorbitant rates the MLP charged for electric lighting.[439] Dissatisfaction with the company's rates rarely voiced as the basis for theft. Even critical comments from the press were few and far in between. For instance, in an article covering the case of Damaso de la Concha, who stole electricity in both of his businesses, *El País* acknowledged the MLP was in its full right to use a group of

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[437] "Se impone ya la reducción de cuotas de luz, calefacción y fuerza motriz: la Compañia obtendrá mayores utilidades si no empeñara en mantener sus tarifas prohibitivas," *El Demócrata*, 27 October 1924.

[438] "Otro robo de luz con los 'diablitos': El marcador no señalaba el consumo," *El País*, 13 August 1912.

[439] AGN-TSJDF/Box 0491/File 087193/year 1906.

inspectors to safeguard its interests, but took the opportunity to remind the company of the need to improve electric lighting, which was generally poor.[440]

Ladrones de Luz consumed electricity in a way that was considered illegal, even immoral in the eyes of some, but which still made them consumers. Through their questionable use they challenged the parameters electric companies sought to establish. In doing so they became active participants in defining how they were to experience their everyday energy consumption. The desired to use electricity at lower rates, or free of charge, coupled with the availability of skilled individuals who marketed their services assured the existence of *ladrones*. Electric companies responded by both strengthening their surveillance efforts and resorting to the law.

Policing electricity bridged public and private spaces. As private citizens in their homes and businesses adopted electricity, the watchful eye of electric companies penetrated previously off-limit spaces in their quest to safeguard a scripted consumption. Interaction with the new technology took place under an environment that gradually tried to limit out of script use. This brought forth a growing number of individuals who from their own barracks tried to police the quotidian use of electricity to little avail. Company inspectors, lawyers, and jurists tried to demarcate what constituted unlawful use of electricity and the price those who engaged in it had to pay. Courts became scenarios in which everyday dramas revealed not only how users and abusers of electricity were going out of script, but also how the new technology was being understood and thereby defined in its context of use.

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[440] "Robo de Electricidad," *El País*, 16 October 1906.

CHAPTER IV
Cooking up Mexican Modernity:
Selling the electric message and Josefina Velázquez de León, 1930s-1960s.

The new ideal housewife, casted as an instrumental actor in the physical and moral reconstruction of the country, was to employ the latest domestic technology in her mission to build a modern nation one house at a time. The cult of middle-class domesticity, found in women's magazines, advice literature, newspapers, fashion guides, catalogs and works of fiction, advocated new attitudes about work and family. If modernity (i.e. women working outside the home, movies, fashion, radio, etc.) disrupted the family, then women, as the central pillar of the home, had to meet that threat by maintaining an orderly home and becoming skilled housewives. Devoid of full citizenship rights, women, then, could still participate in nation-building efforts through housekeeping, even if this meant upholding a modernized patriarchal society. Housekeeping is one of the processes at work in the creation of social class. Crucial social distinctions such as honor, respectability, whiteness, decency, and so forth, are products of housekeeping just as are subsistence, washed sheets, or mended clothing.[441]

The home as the location where class, gender, consumerism, nationalism, and technology interact on a daily basis provides a unique window into how individuals experience, define, interpret and make sense of their conditions of existence. Despite its importance, the intersection between the domestic space and modernity has not received much analysis. Histories of household technology have demonstrated that this transformation followed in lockstep those of the larger socioeconomic system.[442]

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[441] Marie Eileen Francois, *A culture of everyday credit: housekeeping, pawnbroking, and governance in Mexico City, 1750-1920* (Lincoln: University of Nebraska Press, 2006).

Although the transformation of eating habits and the making of a national cuisine have received much-deserved attention, the physical and mechanical transformation of the kitchen lags behind.[443] Indeed, domestic technology has taken a back seat in the few studies that have looked at the household in Latin American.[444] Latin American scholarship on the intersection of women and the process of industrialization has centered on the factory.[445] Scholars are moving away from that fixation and new studies look at the anxiety provoked by women joining the workforce, which was expressed through a new ideal of womanhood and a new ideology about the home. Traditional ideals of motherhood intersected with discourses of science and modernity to create a new social role for mothers.[446]

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[442] Ruth Schwartz Cowan, *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave* (New York: Basic Books, Inc., Publishers, 1983).

[443] Jeffrey M. Pilcher, *Que vivan los tamales! Food and the making of Mexican identity* (Albuquerque: University of New Mexico Press, 1998) and *The sausage rebellion: public health, private enterprise, and meat in Mexico City, 1890-1917* (Albuquerque: University of New Mexico Press, 2006).

[444] Brian Philip Owensby, *Intimate ironies: modernity and the making of middle-class lives in Brazil* (Stanford, Calif: Stanford University Press, 1999); John D. French and Daniel James, *The gendered worlds of Latin American women workers: from household and factory to the union hall and ballot box* (Durham, N.C.: Duke University Press, 1997); An exception being Katharine French-Fuller, "Gendered invisibility, respectable cleanliness: The impact of the washing machine on daily living in post-1950 Santiago, Chile," *Journal of Women's History* , Vol. 18, No. 4, pp. 79-100; Joanne Hershfield, *Imagining La Chica Moderna: Women, Nation, and Visual Culture in Mexico, 1917-1936* (Durham: Duke University Press, 2008); For commercial technology see Jeffrey Pilcher, "Fajitas and the Failure of Refrigerated Meatpacking in Mexico: Consumer Culture and Porfirian Capitalism," *The Americas* Vol. 60, No. 3, Special Issue on Material Culture (Jan., 2004), pp. 411-429.

[445] Ann Farnsworth-Alvear, *Dulcinea in the Factory: Myths, Morals, Men, and Women in Colombia's Industrial Experiment, 1905-1960* (Durham, N.C: Duke University Press, 2000); Daniel James, *Doña María's Story: Life History, Memory, and Political Identity* (Durham, NC: Duke University Press, 2000); Susie S. Porter, *Working Women in Mexico City: Public Discourses and Material Conditions, 1879-1931* . Tucson: University of Arizona Press, 2003); Jocelyn Olcott, Mary K. Vaughan, and Gabriela Cano, *Sex in Revolution: Gender, Politics, and Power in Modern Mexico* (Durham: Duke University Press, 2006); Joel Wolfe, *Working Women, Working Men: São Paulo and the Rise of Brazil's Industrial Working Class, 1900-1955* (Durham: Duke University Press, 1993).

[446] Nichole Marie Sanders, "Gender, welfare and the "Mexican miracle": The politics of modernization in postrevolutionary Mexico, 1937-1958," Ph.D. diss., (University of California, Irvine, 2003).

Women played an important role in constructing a revolutionary society in Mexico. The significance the regime attached to motherhood altered the reformers' visions of the "traditional" patriarchal family. It did not fundamentally change patriarchy at the larger social level, but updated and modernized patriarchal arrangements, inserting the government as the paternal figure within the family.[447] This penetration of the home by the state has been interpreted as an effort to rationalize the domestic sphere. Twentieth-century governments in doing so advocated for mothers to be educated for scientific, hygienic household management and child rising in order to produce "healthy, efficient, patriotic citizen-workers."[448] In the effort to rationalize the domestic space in the rural setting, women can be seen as conduits for the realization of government interests.[449] In México City, reformers, armed with the science of nutrition, penetrated the domestic sphere to transform the eating habits of the working class in order to subordinate the household to the interest of national development.[450]

The state was not the sole director in casting women as the upholders of domestic felicity and family unity, and ultimately national development.[451] Publicists casted

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[447] Sanders; For similar findings in Brazil see Susan K. Besse, *Restructuring Patriarchy: The Modernization of Gender Inequality in Brazil, 1914-1940* (Chapel Hill: University of North Carolina Press, 1996); for an argument on the maternalistic nature of those arrangements see R.E. Pite, "Entertaining Inequalities: Doña Petrona, Juanita Bordoy, and Domestic Work in Mid-Twentieth-Century Argentina," *Hispanic American Historical Review* 91-1 (2011): 97-128.

[448] Victor ia De Grazia, *How fascism ruled women Italy, 1922-1945*. (Berkeley: University of California Press, 1993).

[449] Mary Kay Vaughan, "Modernizing Patriarchy: State policies, rural households, and women in México, 1930s-1940," in Elizabeth Dore and Maxine Molyneux, Eds., *Hidden Histories of Gender and the State in Latin America*. (Durham: Duke University Press, 2000), pp. 194-214.

[450] Sandra Aguilar-Rodriguez, "Cooking Modernity: Nutrition policies, class and gender in 1940s and 1950s Mexico City," *The Americas* 64:2 (Oct., 2007): pp. 177-205.

[451] Work on Peronist Argentina demonstrates how the state called upon housewives to revive the national economy through careful household consumption. See Natalia Milanesio, "The Guardian Angels

housewives as the family's consumer par excellence and consequently campaigns were targeted to the female consumer. Advertising reinforced the position of women vis-à-vis domestic duties by strengthening the notion that their happiness was linked to the family, home, marriage, and even pre-existing gender roles.[452] Featured family dramas rendered women responsible for fortifying the family's unity and happiness through her consumption choices. A Listerine ad, for example, showed a little girl devastated after her father had left her mother due to her hygiene negligence.[453] Her bad breath drove the husband away, broke the family apart and brought unhappiness to its members.

The introduction of modern domestic technologies to the home, then, was not only seen as critical in rationalizing the domestic space and constructing the modern nation, but also as means to reassert a modern and socioeconomic identity. Electrical appliances, in particular, became markers of social distinction for the emerging middle class and the modern housewife. Electrical appliances, beginning in the early twentieth century and intensifying after the 1940s, became the sine qua non of a modern middle-class home in Mexico City. As the following discussion on selling the electric message to the housewife will show, the direct and indirect advertisement of electrical appliances was filtered through the nation's racialized and classed rhetoric on hygiene, modernity and nationalism.

The replacement and introduction of electrical and mechanized devices to the home was not all-inclusive and there were a number of factors that facilitated, delayed or

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of the Domestic Economy: Housewives' responsible consumption in Peronist Argentina," *Journal of Women's History*, Vol. 18, No. 3 (Fall 2006), pp. 91-117.

[452] Julio Moreno, *Yankee Don't Go Home!: Mexican nationalism, American business culture and the shaping of Modern México, 1920-1950*. (Chapel Hill: University of North Carolina Press, 2003), 146-150.

[453] Ibid, 147.

prevented their adoption. The availability of services (running water, electricity, gas) as well as the affordability of the devices themselves was among those major factors. There was also a differentiation among their desirability.[454] In his study of the Sánchez family, Oscar Lewis found that in the *vecindad*[455] Casa Grande, 79 percent of the tenants had radios, 55 percent owned gas stoves, 46 percent had sewing machines, 41 percent used aluminum pots, 22 percent had electric blenders and 21 had television sets.[456] Tenants under an, oftentimes, dilapidated common roof claimed distance among themselves through the ownership of these domestic items. Rufelia's family, for instance, became the Rockefellers of the Casa Grande when her father began to work servicing refrigerators and the family started to renovate their home first buying a gas stove, then a dining set, a radio and even a *tele* (TV).[457]

These subtle changes were aspects of life that profoundly shaped the domestic space. The introduction of new devices and replacement of traditional domestic technologies should be read both physically and symbolically. Materially speaking these technologies were advertised as time and laborsaving appliances, and placed the user in sync with the scientific current that professed the sacrosanctity of time and efficiency in the kitchen. On the other hand, symbolically these devices allowed families to insert themselves in the larger milieu of modern living regardless of their immediate social

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[454] In her study of washing machines in Santiago de Chile, Katherine French-Fuller, for instance, found that families prioritized purchases of consumer durables, favoring items that improved the family's leisure time (radio, TV) of the entire family over those that specifically facilitated the housewife's work in the house.

[455] Inner city tenements

[456] Lewis, Oscar. 1961. *The children of Sánchez, autobiography of a Mexican family*. New York: Random House.

[457] Ibid, 207.

environment. It allowed families such as Rufelia's to become the aristocracy of the *vecindad*.

Recipes for the ideal housewife

María Aguilar de Carbia, who penned a number of cookbooks and culinary columns for women's magazines under the pseudonym Marichu beginning in the 1930s, offered housewives detailed advice on the arrangement of the kitchen.[458] In 1936, Marichu collaborated with the magazine *La Familia* to publish the home advice book *1936 Almanaque de La Familia*.[459] In her section "My kitchen and my pantry," she assured readers that home decoration was a more reliable bank statement of a family's wealth than an income tax declaration.[460] Indeed, any visitor, she added, could act as Sherlock Homes examining the floor, furniture, curtains and rugs to assess the character, financial situation and culture of the members of the family. The kitchen, the room "with no secrets," was to provide the main clues. So regardless of the state of one's kitchen, there was always room for improvements were possible. Model kitchens beautifully reproduced in magazines were not always easy to accomplish. Housewives could nonetheless take two or three suggestions from each model until they had their own comfortable and beautiful kitchen within their means.

Regarding her preference over the ideal heating source for cooking, Marichu insisted that all women, without making a great sacrifice, should replace coal. This source was not only a crime in terms of deforestation, but it was also dirty and inconvenient in

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[458] According to Pilcher, de Carbia authored some of the best selling cookbooks of the 1930s. See Jeffrey M. Pilcher, *Que Vivan los Tamales!: Food and the Making of Mexican Identity*. (Albuquerque, NM: University of New Mexico Press, 1998), p. 130.

[459] Maria A. de Carbia. *1936 Almanaque de La Familia,* (México, DF: Editorial Sayrols, S.A., 1936).

[460] Ibid, pp. 204-206.

many ways. There were on the market a number of ways to substitute it. Gas and electricity, she claimed, were by far the most clean and comfortable ones. Even petroleum and kerosene were a thousand times preferable to coal. The ideal flooring was mosaic, but if one did not own the house, linoleum could be a fresh and clean alternative. For walls, there was nothing like oil paint, which a damp cloth and soap would leave as good as new. When possible windows should be covered with wire netting to prevent flies from entering.

Without the pretense of owning a model kitchen, Marichu wanted her readers to see hers as a "middle class" kitchen that had given her practical results. On the main wall, which still had the hood were the *brasero* once stood, she had an electric range and a sink with a chest of drawers to store cleaning supplies. Next to it stood an opening that housed the trashcan and exposed the sink's plumbing pipes in case drains had to be unclog or repairs were needed. Between the range and the sink, there was a small rack to hold the spices and shelves on the sides for flowerpots. Next to the sink and close to the window, there was a small table covered with oilcloth to be used for washing dishes. The drawer under this table stored spoons, knives and other kitchen utensils. Across the windows, recessed into the wall, stood a cabinet divided by shelves. On the last shelf to the bottom there were all the tools necessary for grinding and mincing: *metate*, *molcajete*, grinder, cutting boards, etc. Above that a shelf with items for boiling: a large teapot for hot water, a milk kettle, a broth pot, and pans of varying sizes. The first shelf on the top housed all the ovenware: trays and ovenproof crystal and china. Below that, everything one needed to strain, whip, grate, and press, and below it, dishes for the domestic servants. Under the second window, a large table covered with granite, with a broad chest of drawers on the

side to store pastry-making devices. It was a pleasure for her and her cook to work in such organized kitchen as they could find what they needed right away. In the pantry, next to the kitchen was her "Westinghouse" refrigerator. Everything in my little kitchen and pantry, she concluded, was red and white.

Marichu's detailed description of her kitchen provides a picture of how the "room without secrets" had been transformed by the mid 1930s. The electric range stood under the hood where once the *brasero* had reigned supreme. The absence of soot meant that white cabinets were a possibility. There was indoor plumbing and the Westinghouse refrigerator. But the transformation was not yet complete.

Reflecting on the impact of the armed revolution in the gastronomy of Mexico City, Salvador Novo claimed that the humble submissive domestic servants, *pulque* and *siestas* were relics of the past. Alongside the *brasero de carbón*, the *metate*, the *molcajete*, the clay pots, the wood spoons and the *molinillo*, these relics, he argued, had been swept away, vanquished, outdone.[461] Outdone? He undecidedly asked.[462] Residents were now cooking with gas, and in aluminum cookware. They had the help of the blender, which, he asserted, "indiscriminately ground grains, peels, fruits and skins, and that of the refrigerator in which they could preserve chicken corpses and fish mummies in hibernation." There were also canned vegetables, ground coffee, and tortillas forged in machines. As to domestic maids, he concluded, it was inspiring to see that they had found their emancipatory path as ranchero and ballad singers, and Go Go Girls.

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[461] *Brasero de carbón* is a charcoal brazier; *metate* is a flat stone for grinding; *molcajete* is a grinding stone bowl; and the *molinillo* is a wood whisk for stirring chocolate milk.

[462] Salvador Novo, *Cocina mexicana; o, Historia gastronómica de la ciudad de México*. (Mexico, DF: Editorial Porrúa, 1967).

Written in 1967 Novo's reflection reads as a nostalgic recount of the minutiae of daily life that had come to transform the Mexican kitchen in the first half of the twentieth century. The introduction of new heat sources (gas and electricity), the replacement of traditional cooking devices (i.e. the *metate* and *molcajete*), the advent of new food preservation methods (canning and refrigeration), and the overall mechanization of burdensome domestic chores (tortilla making, ironing and washing clothes) were transformations that had been gradually accruing across homes in the city.[463]

There was still in Marichu's kitchen a good number of elements that Novo nostalgically recalled as relics of the past in his 1960s reflection. The metate, molcajete and the maid were still part of the kitchen. In the thirty years that separate their accounts the physical and symbolic transformation of the kitchen sought to do away with those so-called relics. The following discussion explores the transformation. That is, how were electrical appliances sold to the housewife? How was the electric message framed? How were they integrated into the existing cultural system of needs?

Selling electric luxury

The promotion of electric living, in full swing after World War II, had indeed been advertised since the turn of the twentieth century. Early newspaper advertisements of domestic electrical appliances and electric lighting for the home extolled certain characteristics along with images that together presented these items as luxury objects unattainable by most of the city's population. Advertisements of electric lighting, along with electric water pumps and electric elevators, were among the first items found in the city's dailies. Those of electric lighting and electric lamps, however, tended to be more

explicit about their targeted audience. These advertisements provide us a clear picture of the type of home that was to house the advertised item and how its introduction would benefit the domestic sphere. An ad of the Mexican Light and Power Company[464] listed some of the advantages that only electric lighting had to offer. Electric lighting, it claimed, did not destroy the color or smoke up the decorations, tapestry, fabric or paintings of the home.[465] It also presented scenarios that praised its safety over other lighting sources by highlighting them as dangerous elements inside the home. A gust of wind could toss an incandescent lamp against fabrics without any danger. You would appreciate this advantage, the ad stressed, compared to what would have resulted if instead the wind had tossed an open-flame lamp over.

Electric lighting ads also highlighted a hygienic rationale. Electricity, read an ad, brings happiness. It claimed that all artificial lighting, with the exception of electric lighting, consumed oxygen out of the air, stealing from your and your families' lungs the most essential and vitalizing element of the air we breathe.[466] An open-flame burning inside your home, it warned, consumes as much oxygen as four adults. Oxygen, claimed another ad, is the property that gives life to the air we breathe, and an open-flame quickly corrupts it, leaving behind only the poisonous carbonic gas turning the home impure.[467]

Commercial advertisements for electric lighting also framed their arguments on science. The MLP, for instance, advertised free expert service advice for illuminating a business or residence. Modern research, it claimed, had demonstrated that illumination

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[464] MLP from here on.

[465] "Algunas de las ventajas que posee el alumbrado eléctrico, y que no tiene ningún otro sistema," *El Imparcial*, 7 October 1910.

[466] "La electricidad trae consigo la felicidad," *El País*, 8 May 1910.

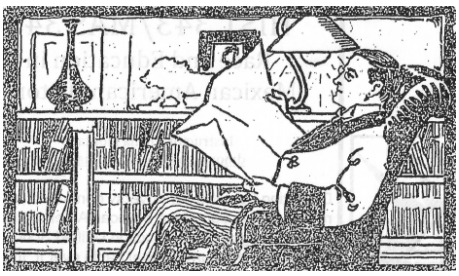
[467] *El Imparcial*, 7 October 1910.

was indeed an exact science.[468] There was a right and a wrong way of using light. For interested parties, the company's illuminating engineer could lay out a complete scheme of lighting a store, residence or show window based on modern and scientific principles. Another of the company's electric lighting ads based its argument on progress. It asserted that kerosene, along with other old forms of incompetent illuminations, were a thing of the past. It provided readers with a linear interpretation of past artificial lighting sources. At one point people had burned pitch fagots and that was considered sufficient, then once tallow dip came about people discarded pitch fagot in disgust.[469] Kerosene lamps, although a great improvement over tallow dip, was to give away to the logical development of science and the greatest of illuminants: ELECTRICITY.

Textually electric lighting was advertised as clean, bright, odorless, sootless, smokeless, hygienic, flameless, convenient, and always ready. Ads meshed arguments based on science, hygiene, safety, and human control over the new light source. Visually, however, these ads presented electric lighting as a complementary element of luxury living. The two images on the top-left depict two well-dressed gentlemen sitting down in high back chairs absorbed in their reading. The gentleman in the first image sits in front of fully stacked bookshelves; perhaps in his home's own library room. Incandescent electric lamps nearby allow both gentlemen to read a newspaper or a book from the comfort of their chairs. The image on the bottom-left and the one of the right are

[468] "We give expert service free," *The Mexican Herald*, 30 June 1912.

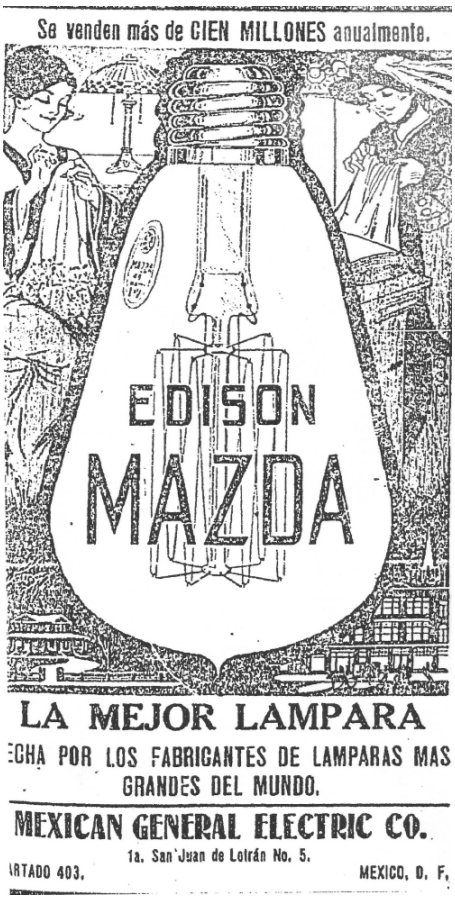
[469] "The past is dead – only the present lives," *The Mexican Herald*, 1 September 1912.



El País, 4 September 1910

El Imparcial, 7 October 1910

El País, 8 May 19



El Imparcial, 2 October 1913

Figs. 21 Set of ads selling electric comfort

scenes where only women are present. Unlike the gentlemen who are absorbed in intellectual activities, women are portrayed engaging in activities relented as womanly. The one on the bottom shows two women on the forefront engage in conversation on the foot of a staircase. The woman ascending the stairs wears a dress that brushes the floor, while the other woman, wearing a three-quarter length coat seems ready to go out. In the middle of both women stands a brightly lit electric light fixed on the column of staircase railing. The image is complemented with maid on the background next to a massive flowerpot stand. The ad on the right places an oversized Edison Mazda light bulb on the front and center accentuates the inner workings of the bulb. On the background two

women on lavish nightgowns engage in needlework with a smile on their faces. Sitting on opposite sides of a table where a Mazda light bulb powers a lamp, these women are able to carry out such a delicate activity thanks to artificial lighting. On the bottom of that scene two homes on either end of the ad bright glow in the midst of night. The message is clear: an activity that women could previously only take on during daylight hours can now be perform during evening hours thanks to the Mazda light. That is, artificial lighting had extended the day and consequently the activities that could be performed for these women.

Advertisements for electric irons placed emphasis on control and efficiency. Electric irons promised to lessen the burden of one of the most time and labor consuming domestic tasks. An ad from the MLP claimed that to iron by electricity made the chore pleasant by saving countless steps, time, troubles, bad temperament and sweat.[470] Old irons had to be set across the top of a very hot stove for extended periods of time. An article on washing and ironing advised owning between four and six irons.[471] As many irons as possible then were placed at once so as soon as the one being used cooled down another hot one would be available to keep as much as a steady pace as possible. This meant that the ironing station, usually a table that doubled as such, was moved close to the stove or *brasero* to save steps but not too close as to be unbearably warm. The electric iron offered the luxury of no longer having to use a stove, which meant that ironing could be done in any other room that had a light socket. At the turn of a switch, promised the

[470] *El País*, 19 January 1911.

[471] "Para las damas: el lavado y el planchado," *El País,* 5 March 1908.

ad, "You would have it ready any time, day or night."[472] It was also to satisfy maids as they could iron "faster and better, and consequently have more time" for other chores.[473]

Unlike electric lighting, the targeted audience for electric irons was housewives who, although having domestic maids, might periodically engage in ironing. An image from an MLP ad, for instance, promoted electric irons as the housewife's iron for "lace and fine fabrics that could not be trusted to the maid or the laundress."[474] A different image, from another of the company's ads, advertised electric irons to be used by housewives' themselves in case of emergency. The image depicts a housewife ironing at a table while conversing with two female friends. If indeed the clothing of the housewife makes it hard to establish her social class, the huge decorated broad brimmed hats the friends are donning places them at a privilege position. The text informs the reader that a sudden storm has made the ironing necessary and that regardless of the number of domestic maids a housewife might have, she needs an electric iron for special occasions.[475]

The electric iron then granted the domestic maid, and occasionally the housewife, the flexibility of taking the chore away from the stove to wherever else a light socket was available. Ads also highlighted control over temperature. Underlining the technical characteristics that made it possible did this. The construction of an electric iron claimed an ad "is entirely scientific. All heat is uniformly distributed on the flat surface and it

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[472] *El Imparcial*, 29 December 1910.

[473] *El País*, 19 January 1911.

[474] *El Imparcial*, 12 January 1911.

[475] *El Imparcial*, 16 November 1911.

remains hot as long as you need it."[476] A single electric iron was said to work as much as multiple old-fashioned ones, so owning multiple irons was a thing of the past. Electric irons were to be found in the showroom of the Mexican Light and Power Company for customers to peruse and were available to take home on a 30-day trial basis.

Early electrical devices were not only created and promoted to replace those previously powered by older energy sources, which were meant to improve living conditions in terms of hygiene and safety as well as saving time and labor. There were also those that sought to create new forms of domestic sociability. Tabletop cooking was advertised as a pleasant, cost efficient and an elegant way to enjoy a meal. The true pleasure of a meal, claimed an ad, is the way it is served. Countless painstakingly prepared meals, it added, have been ruined by an endless wait time. An electric toaster-stove was to allow the housewife to start cooking once she had already sit down at the table, with the added benefit that each plate would be served steaming hot "directly off the grill."[477]

Tabletop cooking was marketed as ideal when having to cook for two people. Instead of going into the kitchen and remaining next to a hot stove, the housewife could prepare the meal in the company of her husband. Meals prepared in advanced in the kitchen, read ads, meant wasted leftovers that translated into squandering money. The new method of cooking, then, would also result in savings since it would only allow for the preparation of the desired amount of food.[478] Another ad argued that to prepare an exquisite meal in an elegant way meant to cook outside the kitchen on an electric toaster-

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[476] *El Imparcial*, 29 December 1910.

[477] *El País*, 29 December 1910.

[478] *El Diario*, 21 July 1912.

stove on the table.[479] It claimed that almost any meal could be prepared faster and better. The image on the bottom-right depicts a couple at the table with the husband absorbed in the reading of a newspaper while the wife attends to a coffee percolator and a toaster-stove. The image provides its own reading with a caption that reads "A 20th century refinement – Electrical Cookery."[480]

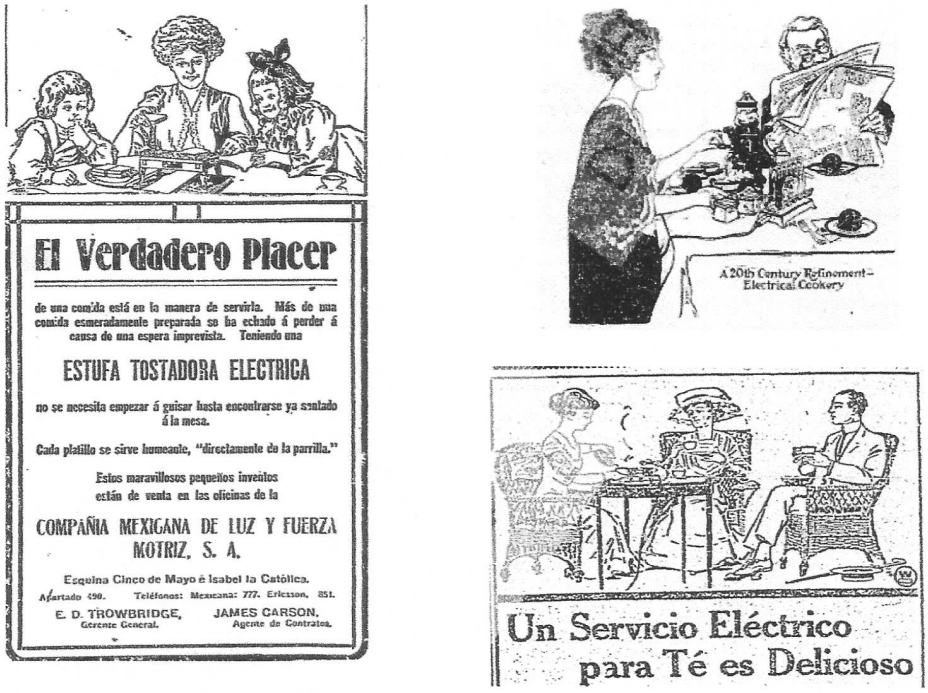
El Verdadero Placer
de una comida está en la manera de servirla. Más de una comida esmeradamente preparada se ha echado á perder á causa de una espera imprevista. Teniendo una
ESTUFA TOSTADORA ELECTRICA
no se necesita empezar á guisar hasta encontrarse ya sentado á la mesa.
Cada platillo se sirve humeante, "directamente de la parrilla."
Estos maravillosos pequeños inventos están de venta en las oficinas de la
COMPAÑIA MEXICANA DE LUZ Y FUERZA MOTRIZ, S. A.
Esquina Cinco de Mayo é Isabel la Católica.
Apartado 490. Teléfonos: Mexicana: 777. Ericsson, 851.
E. D. TROWBRIDGE, Gerente General.
JAMES CARSON, Agente de Contratos.
A 20th Century Refinement – Electrical Cookery
Un Servicio Eléctrico para Té es Delicioso

Fig. 22: Selling tabletop cooking
Sources: (clockwise) *The Mexican Herald,* 23 October 1912; *El Imparcial,* 29 March 1912; *El Pais,* 29 December 1910.

[479] *El Imparcial*, 19 January 1911.

[480] *The Mexican Herald*, 23 October 1912.

The pleasure of tabletop cooking could be extended to guests. It was a novel and attractive manner of entertaining. An electric tea service promised the housewife the opportunity to look after her guests without trouble and without the assistance of domestic servants. An ad asked the housewife "to allow electricity to come to her aid."[481] Another electrical application that could be used at the table was the electric chafing dish. An ad from the General Electric Company claimed that guests would be delighted with any meal cooked on their chafing dish.[482] An up-to-date hostess, it added, uses electricity, which is better than alcohol, gas, oil or any other old fashioned and expensive dirt producing methods of cooking.

Window displays, model kitchens and salesrooms in the downtown area complemented commercial advertisement of domestic electrical implements in the city's dailies. Those manufactured by General Electrical Company[483] could be purchased on San Juan de Letrán Street, where the offices of the Mexican General Electric Company[484] were located, on Avenida 16 de Septiembre were the American Grocery Company[485] stood, and on the intersection of 5 de Mayo and Isabel La Católica, in the sales department of the Mexican Light and Power Company. Indeed all three of these companies ran combined newspaper advertisements enticing readers to stop by their offices to experience first hand the delight of electrical cookery.

The AGC set up a model electric kitchen to invite customers to see for themselves

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[481] *El Imparcial*, 29 March 1912.

[482] *The Mexican Herald*, 8 February 1914.

[483] GE from now on

[484] MGEC from now on

[485] AGC from now on

the advantages of electrical cooking. This new method was claimed to be "the modern way because it is clean, convenient, comparatively cheap and the most hygienic of all methods."[486] The model kitchen had in exhibition coffee percolators, teapots, toasters, grills, flat irons, disc stoves, and water heaters, all of which were electrical. Departing from the "seeing is believing" idiom, the model kitchen was to prove to the customer that "Edison's dream[had] at last been realized [and that] we all be cooking by electricity a decade from now and would be today were we not frightened by a false notion of the cost." It was then not only the novel cookery method, but that of the future. To cook by electricity, claimed the MGEC, was within everyone's reach given the low prices offered by the MLP. Indeed, it claimed that it was cheaper to heat by electricity than by any other method. With a cent of electricity, at a rate of 10 cents per kilowatt, read an ad, you could operate an electric grill for six minutes, a radiator for 8, an electric sewing machine motor for 3 hours, an electric iron for 5 minutes.[487] This meant, it added, that you could boil two liters of water, cook a dish on a pot, make four cups of coffee in an electric coffee percolator, and have a hot stove for 4 to 15 minutes.

NUEVOS METODOS DE COCINAR
Exhibición Culinaria
American Grocery Company
Los mejores son los mas baratos.
MEXICAN GENERAL ELECTRIC COMPANY
1a. San Juan de Letrán, 5.
MEXICO, D. F.
APARTADO 403.
Visit Our Model Kitchen.
"SEEING IS BELIEVING", so the old saw runs, and accordingly we have established a
Model Electric Kitchen.
A visit to this most interesting exhibition, which is situated at
The American Grocery Co.,
Ave. 16 de Sept. 12.
will prove to you that Edison's dream has at last been realized. We all will be cooking by electricity a decade from now and would be today were we not frightened by a false notion of the cost.
Last Week of Electrical Exposition.
5% Discount on all Goods Sold.
COOK BY ELECTRICITY
It Is The Modern Way.
BECAUSE IT IS CLEAN, convenient, comparatively cheap and the most hygienic of all methods.
ELECTRIC COFFEE PERCOLATORS.
ELECTRIC TEA POTS.
ELECTRIC TOASTERS.
ELECTRIC GRILLS.
ELECTRIC FLAT IRONS.
ELECTRIC DISC STOVES.
ELECTRIC WATER HEATERS.
And the greatest of them all,
The New G. E. Electric Range
By the simple twist of the switch you can prepare any sort of a meal from a slice of toast and a cup of tea to a banquet.
Our special cooking rates make this feasible.
COME AND BE CONVINCED.
THE MEXICAN LIGHT AND POWER COMPANY, LTD.
CORNER CINCO DE MAYO AND ISABEL LA CATOLICA.
Phones: Eric. 851. Mex. 777. Apartado 490.
HARRO HARRSEN, General Manager.
JAMES CARSON, Contract Agent.

Fig. 23 Cook by electricity ads
Source: Left – *El Diario*, 4 August 1912; Right – *The Mexican Herald*, 4 August 1912.

[486] *The Mexican Herald*, 4 August 1912.

[487] *El Diario*, 14 July 1912.

Going beyond displaying the necessary elements to cook in the so-called modern way, the AGC held a culinary exhibition in the summer of 1912 to demonstrate that to cook by electricity was clean, cheap and simple, and that every type of dishes could be easily prepared. Ads inviting customers to visit the model kitchen included images were women were present. The image on the left has a woman in a long dress and apron standing in front of an all-electric kitchen. In the image on the right, a woman stands behind a counter that had on display coffee percolators, toaster-stoves and other small heating electrical devices.

The MLP also sought to attract customers through its sales department. According to the company's ads, the establishments of the department was a response to the "greatly increased demand for electrical heating and cooking devices," which they claimed were no longer experiments and were now guaranteed by the manufacturers.[488] Customers were asked to consider the comfort of electricity in their domestic space. At the simple turn of a switch they could heat the baby's milk, toast bread at the table, make a delicious cup of coffee during the meal and discard the old and dangerous hot water bottle. All of these could be performed outside the kitchen in any other room in the house. For those customers unable to go into the sales department, the company offered to send sales representatives to their homes.

At the twist of a switch kitchen electrical appliances promised a comfortable, hygienic and odorless method of cooking. The afforded simplicity and speed in preparing meals, claimed an ad, would allow for the maid to leave the brasero behind.[489] To cook with coal or firewood was uncomfortable, costly and dirty compared to the advantages of

[488] *The Mexican Herald*, 14 April 1912.

[489] *El Diario*, 4 August 1912.

an electric kitchen that offered to save time, labor and money. Early cooking appliances consumed too much energy and burn out easily. GE ads sought to counteract this image by highlighting the technological advances reached at the company's lab in Schenectady, New York. One of these advances had been the use of calorite metal for the manufacture of the resistance or heating coil. Spiral coils of calorite metal used in heating units was supported by heat-resisting insulators and protected by a neat nickel-plated screen made from expanded metal that had been patented in 1906.[490] The superiority of calorite metal laid on its resistance, it melted at about 2800° Fahrenheit: it was "thermally indestructible under normal conditions."[491] Unlike other electric cooking appliances, GE promoted its products as having been perfected using the famous calorite metal, they were both indestructible and economic in energy consumption.[492]

Electric companies and manufacturers of electrical devices were not the only ones involved in promoting domestic appliances through exhibition. Local retailers also sought to familiarize potential customers with the advantages of electricity in the home. El Abastecedor Eléctrico, which reputed itself as the retailer with the best selection of electrical devices in the city, joined AGC and MLP in displaying GE appliances in action. In one of its ads, it invited customers to come to their store between 6 and 7:30 pm to see electric ranges, electric irons, coffee percolators, and grills, among other devices, being worked by the delicate hands of a nine-year old girl.[493] This strategy aimed at convincing

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[490] For more on the development of the electric range see Tom Blackburn, "The Development of the Electric Range," *Electrical Merchandising*, Vol. 89 (July 1957).

[491] Maud Lucas Lancaster, E. W. Lancaster, and Stephen L. Coles. *Electric Cooking, heating, cleaning, etc.*: *A manual of electricity in the service of the* home. (New York: D. Van Nostrand Co., 1914), p. 84.

[492] *El Diario*, 18 August 1912.

costumers that domestic electrical implements were both easy and safe to use that even a child could do it was widely used.

Promoters of electrical devices in the Mexican capital during the early twentieth-century exalted what were considered universal scientific attributes. Regardless of the size of the electrical implement, whether it was an electric range or an electric curler, they were associated with hygiene, science, and modernity and offered customers greater control over everyday domestic chores and personal routines. The universality of the language employed meant that marketing messages could be transplanted from one market to another without much consideration of the new context under which it was being received. Behind the early advertisements previously examined there is no Mexican consumer in mind per se. The rhetoric employed in American advertisements of electric devices, for instance, could be found sprinkled in varying dosages in those found in the city's dailies. Indeed, some of the ads used the same caricature characters across markets. Two ads for electric irons, for instance, the first from the Idaho-Oregon Light and Power Company and the second from the Mexican Light and Power, include the same identical image of a housewife at her iron station.[494] The emergence of the Mexican housewife as the consumer for whom the electrical message had been drafted would have to wait until after World War II.

The MLP had a dual interest in selling the idea of electric living. The sale of electrical appliances through its sales department secured for them the domestic consumption of electricity, a market they were eager to develop. The Sales Department established in the early 1910s was transformed into a showroom called *Sala de*

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[493] *El Diario*, 25 August 1912.

[494] *Idaho Daily Statesman*, 16 June 1910; *El Imparcial*, 16 November 1911.

Electricidad for the demonstration and sale of household appliances. Ads inviting customers to the showroom extolled the same characteristics earlier advertisers had: cleanliness, speed, safety, and the promise to save time and labor. The showroom did offer a novel ingredient: advice from a cooking and pastry expert.[495] An expert *señorita* was available to teach customers how to cook with electrical appliances. The service was free of charge and classes could be done at the customer's home, once a purchase had been made, or at the company's showroom. By 1931, a new room for the showroom was built adjacent to the Company's main office building on Gante Street. During that year 2,537 electrical devices were sold in the showroom, down from the 4,041 pieces sold in 1930 and the 3,695 pieces sold in 1929.[496] The decrease in sales, according to the annual report, was the result of the new monetary law.

LA CALEFACCION ELÉCTRICA
YA NO ES UN EXPERIMENTO,
ES UN HECHO.
Hornilla
Limpieza, Sencillez, Rapidez, Economía
Estufa
"Sala de Electricidad"
Si Ud. no puede visitarnos, llámenos al Teléfono Eric. 4-01, y uno de nuestros agentes irá a demostrar el aparato por el cual Ud. se interese.
Tenemos el surtido más grande de aparatos de calefacción electrica. Ud. puede hacer todo por electricidad en su hogar, venga y se lo demostraremos.
Comprar un Aparato en nuestra "Sala de Electricidad" significa:
Servicio, Calidad y Garantía
Cía. Mexicana de Luz y Fuerza Motriz, S. A.
Calle de Gante núm. 20.
Rizador
Plancha

Fig. 24: Ad inviting housewives to the Sala de Electricidad
Source: Pilar Gonzalbo Aizpuru and Milada Bazant. *Tradiciones y Conflictos: Historias de la vida cotidiana en Mexico e Hispanoamerica*. (Mexico, D.F.: El Colegio de Mexico, 2007), p. 364.

[495] For ads promoting this service see D. M. V. de R., *Manual de cocina practica: adaptada a paladares delicados y de buen gusto*. (México, D.F: Papelería "El 5 de Mayo," 1929) unpaged; and *La cocina practica cosmopolita* (México, D.F.: Imprenta a su Orden, 1931).

[496] Mexican Light and Power Company. 1931. *Annual report*.

Beginning in the 1930s and accelerating after World War II, electrical appliances underwent a fundamental transformation. Once promoted as novel and luxury items available to the upper crust of society, their mass production resulted in cheaper and more accessible consumer goods. Their new affordability, along with the expansion of the electric grid and the rise of white-collar jobs promised a desirable market expansion. Consequently, efforts were directed towards developing new advertising strategies for selling the idea of electric living to emerging middle-class families. This process, unlike earlier advertisements of the twentieth century, included the symbolic construction of the ideal middle-class housewife and the physical space she managed: the kitchen.

The advertisement of electrical appliances, particularly those for the kitchen, found new platforms in the mid 1930s. National and international manufacturers, local retailers, and the MLP continued to sponsor cooking classes and began to insert advertisements in locally published cookbooks. The proliferation of these ads for in cookbooks materialized under a context in which ideas about the kitchen were under transformation. Electrical appliances were no longer promoted as isolated elements that needed to be introduce into this space to replace older methods of cooking, rather they were publicize as part and parcel of the modern kitchen.[497] *La cocina moderna* called for the introduction of new heating sources, and by the 1930s both gas and electric ranges were seen as improvements over coal and wood-burning stoves and *braseros*. Improved heating sources, mechanized cooking procedures, newly available cookware, improved food preservation techniques, as well as new ideas on the type of flooring, wall paint and

[497] To a certain extent it would be misguided to speak of electrical kitchen appliances in totality given the fact that each particular electrical appliance had its own individual historical trajectory, when possible the following discussion will concentrate on a particular one.

organization of utensils and furniture were deemed as essential in accomplishing the transformation of the kitchen.

Cookbooks have been recognized as important documents that have registered the transformation of traditions and everyday life rarely found in traditional historical sources. They provide us with a better understanding of the life of domestic workers and their responsibilities inside the home, the role of women as cookbook writers, the construction of female domesticity, as well as the creation of the ideal modern kitchen. Cookbooks as cultural texts reveal much of their historical and cultural context. Recipes are loaded with meaning particular to their time and place. At the same time they provide us with ideas that were been debated through comments, references and historical capsules. The following discussion takes cookbooks as the main window to explore the physical transformation of the kitchen and the creation of the ideal housewife, and it is complemented with material from women's magazines and manuals.

Training the ideal housewife

Josefina Velázquez de León, more influential than a Mexican Julia Child, was a family cook with no formal training, who wrote over 150 cookbooks for middle-class Mexican wives; ran her own cooking school from the '30s onwards to teach her recipes; and wrote cooking columns for women's magazines that catered to socially privileged women.[498] Early in her career, Josefina secured the backing of General Electric. It is uncertain whether Josefina approached GE or the company approached her, but by the mid 1930s Josefina was heading the culinary school "*Academia Calrod*." Calrod was the name of Hotpoint's patented metal-sealed flattop cooking coil that had revolutionized

[498] For a discussion of Josefina's background and her culinary patriotism see Jeffrey M. Pilcher, "Josefina Velázquez de León: Apostle of the Enchilada," in Jeffrey M. Pilcher, Ed. *The Human Tradition in Mexico*. (Wilmington, DE: Scholarly Resources, 2003), pp. 199-209.

electric cookery in the last two decades. The Hotpoint Company, which had specialized in the manufacturing of electric flatirons and table appliances out of Ontario, Calif., had been bought by GE in the 1910s and brought together with Hughes Electric Heating Company under the Edison General Electric Appliance Corporation, better known as Hotpoint. The Calrod Academy was promoted as "French cuisine through the General Electric System." Josefina published her first cookbook in 1936-titled *Manual práctico de cocina y repostería*, which had lengthy inserts that informed readers what the GE-Hotpoint range and GE-Hotpoint refrigerator were and the advantages it had to offer for the home.[499] The thick *Manual* also included the photograph below from the Academy's kitchen, which featured the advertised range on one side of the wall and the refrigerator on the other. A time and temperature table for baking, roasting, and cooking on the hotplates was also included to instruct readers how to "cook efficiently on the GE-Hotpoint range." There were also ads for a mixer with diverse accessories and a dishwasher that promised to do away with the most tedious chore in the kitchen.

[499] Josefina Velázquez de León, *Manual práctico de cocina y repostería*. (México City, DF: Editorial, 1936).

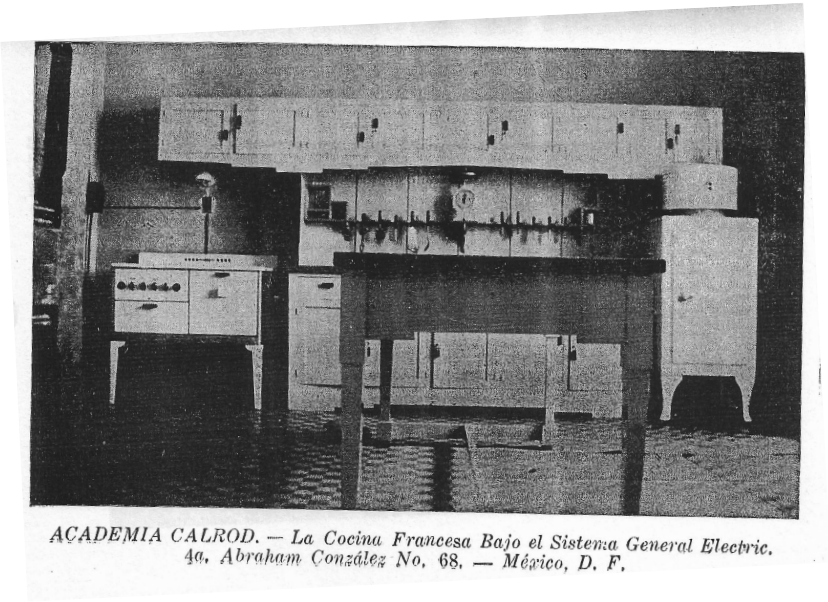

Fig. 25: Modern kitchen at Academia Calrod
Source: Josefina Velázquez de León, *Manual práctico de cocina y repostería*. México City, DF: Editorial, 1936).

There is no defined consumer for the electric range and refrigerator in these inserts. Instead they highlight the benefits these were to bring for the maid, and consequently for the home as a whole. The electric range, for instance, underlined that the heat and time were used practically and scientifically. There was neither fire to light up, or smoke, nor soot. There was no heat outside the stove and the maid did not have to stay in the kitchen. The GE-Hotpoint was advertised as fresh, which meant that the temperature in the kitchen in the summer months would remain pleasant. For those who in charged of cooking, that meant personal comfort and greater tranquility for the housewife given that after all, she had to deal with the maid "day after day and knows that a happy maid contributes significantly to the home's wellbeing."[500] The range was promoted as economical. Its automatic interrupter clock and temperature control in a modest home with a single maid, for example, would allow the maid to carry out chores

[500] Ibid, 127.

away from the kitchen. Chores that otherwise would require the services of another maid, driving up housekeeping expenses. There was also the added comfort that would grant the approval of the housewife as well as that of the cook. The overall work of the cook would be reduced as there would be no fire to light up and keep alive, no need to look after the pans, or filth to clean from the exterior of utensils, plus she would be protected against failures in the preparation of meals as she had temperature controls she could trust.

The informational inserts emphasized the scientific, nutritional and healthy characteristics of the electric range and refrigerator. These inserts, however, stood divorced from the rest of the book. Although there was no effort on Josefina's behalf to integrate this section, her relationship with GE went beyond providing space for inserts in her book and introducing the brand's electrical appliances to the academy's kitchen. Mrs. de Alba, one of the instructors from GE's Home Economics department, taught a weekly Monday class at the academy. Individuals who bought a copy of the *Manual* received the right to four of those classes during the year.

By the mid 1940s there were marked differences in the way electrical appliances were presented in cookbooks and the ideal consumer advertisers had in mind. The push to introduce new technology to the domestic space came alongside the increasing commodification of cookery knowledge, the expansion of processed foods, the establishment of supermarkets where the latter were made available, and the far-stretching consequences brought about by rapid urbanization and industrialization. In this context, the construction of the ideal housewife can be seen as one of the gendered constructions that embodied the social anxieties of the period. Although standing at the

opposite pole of the cinematic figure of "fallen women" (prostitutes, *rumberas* and *ficheras*), the ideal housewife also "embodied a growing modernity in Mexico as well as a corresponding anxiety, uncertainty, and cultural crisis."[501] Like the cautionary tales on the silver screen that offered commentary of the devastating consequences the corrupt metropolis could have on women, commentary found in home advice literature offered guidance on preserving domestic felicity and family unity.

Writing on the consequences of industrialization and urbanization on foodstuffs, Josefina claimed that the latter had become industrialized, and even denaturalized. It was necessary, she claimed, to use once again what nature provides us and to study the old, which is always new when enriched with experience and modern science.[502] Advice dispensed in her cookbooks, her culinary magazine and other women's magazines consistently sought to bridge the old with the modern. This was particularly evident in the cookbooks she specifically wrote for new and future housewives.

At least since the late 19th century, female-cooking instructors in private culinary schools trained middle class women in Mexico City. This training was believed to be a vital and important part of the development of women and at the same time it reproduced female values. Women were held responsible for the happiness of the home and thereby they had to be trained. Josefina agreed and from early on advertised her cookbooks as offering such training. Even housewives who did not have the habit of cooking were assured success if they carefully followed recipe instructions.[503]

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[501] Andrew G. Wood, "Blind Men and Fallen Women: Notes on Modernity and Golden Age Mexican Cinema," *Post Identity*, Vol. 3, No. 1 (2001), p. 12.

[502] Josefina Velázquez de León, *El Arte de Cocinar*, Number 8 (March 1944), p. 1.

[503] Josefina Velázquez de León, *El Arte de Cocinar*, Number 17 (December 1944), back cover.

By the early 1940s, Josefina's cooking school[504] made book packages available as wedding gifts. *Los 30 Menus*, *La Cocina Económica,* and *Manual Práctico de Cocina y Repostería Selecta* were among the first made available in a washable-white Keratol cover with the bride's name engraved in golden print sold inside a cardboard box decorated with orange blossoms and ribbons, and finally, wrapped in cellophane.[505] Also available were luxury cases with leather bound cookbooks nicely placed inside satin-covered cases. Adapting Josefina's personal motto "*saber cocinar es base de la economía*" (knowing how to cook is the basis of economy), the ad added, "*la economía es la base de un hogar feliz*" (economy is the basis of a happy home). Those who gave these beautiful wrapped presents away would have the "satisfaction of presenting the bride with something useful that will contribute to her happiness."

Cooking was seen as the sole responsibility of the wife and it was through cooking that she could assure the happiness of her home. The latter was based on keeping the husband happy. The securest way to a man's heart, wrote Josefina, and was to satisfy his belly. Women who desired to keep their husband's love, she added, "must always receive him in a lively spirit, with a kiss in the mouth and a savory and well-seasoned dish in her hand." Women who desired to maintain the peace and happiness of her home, then, had to place great emphasis on cooking. Josefina argued that men were by nature home loving, and if he went out and about in search of entertainment, the wife was to be blamed for not knowing how to provide at home.[506] After all, no husband could resist the

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[504] The school had changed its name to Academia de Alta Cocina, Repostería y Decorado.

[505] Keratol is a waterproof material used in bookbinding

[506] Josefina Velázquez de León, *Manual practico de cocina y reposteria*. 3ª ed. 1er. Tomo. (Mexico, DF: Editorial J. Velazquez de León, 1943), p. 8.

charm of a comfortable home, a smiley wife and a well-served table. The image below perfectly captures this idea. A husband has come out of his house to receive a group of friends. On the background, through a window, a housewife wearing an apron is giving the final touches to the dinner table. Already on the table there is a cake, a bottle and a dish. The husband, then, is presented with two scenarios on how to spend the night: inside his home enjoying a family dinner with his dedicated wife and on the other, a group of friends who had come to take him out for the night. In the group of friends, a well-dressed woman, in stark contrast with the homey looking wife behind the window, stands defiantly awaiting for the friend's response. The husband says "I would go out to dinner with you if my wife did not know how to cook."[507] The caption on the bottom of the image reads "the wife that knows how to cook has the satisfaction of keeping the husband at home." Culinary knowledge then was the key to family unity and domestic felicity. A housewife's culinary talent served as a tool to keep at bay the corruptive elements of the city.

[507] Josefina Velázquez de León, *La Cocina de la Recién Casada*. Tomo II, 2a ed. (Mexico, DF: Ediciones J. Velázquez de León, 1962), p. 98

El Mejor Regalo de Boda
"COCINA ECONOMICA"
PRECIO . . . . . $ 10.00
"MANUAL PRACTICO DE COCINA Y REPOSTERIA"
PRECIO . . . . . $ 18.00
MODELOS DE LUJO
ACADEMIA DE ALTA COCINA
Bolivar 38. México, D.F.
Mex. 1-94-78 Eric. 13-69-68
"LOS 30 MENUS"
PRECIO . . . . . $ 6.50

"Con ustedes iría a cenar, si mi esposa no supiera guisar".
LA ESPOSA QUE SABE COCINAR, TIENE LA SATISFACCION DE RETENER AL ESPOSO EN EL HOGAR

Fig. 26 (left) Back cover of *La Cocina de la Recién Casada*. –
Fig. 27 (right) Illustration promoting culinary knowledge for the sake of family felicity
Source: Josefina Velázquez de León, *La Cocina de la Recién Casada*. Tomo II, 2a ed. (Mexico, DF: Ediciones J. Velázquez de León, 1962), p. 98

A wife who was proud to be one, advised Josefina, had to dedicate a great deal of her time to the study and improvement of the culinary art. She assured her readers that her book was not only a compilation of recipes, but it was indeed educational. Whoever studied it carefully and put it into practice could completely dominate the art of cooking.[508] In the dedication page of *Cookbook for the Newly Wed,* Josefina argued that in the past *señoritas* were trained to become perfect housewives, although they did not spend much time learning how to cook as they had specialized servants for it. Nowadays, she argued, women faced a big problem since upon completing their education they went on to do office work neglecting all the necessary details on how to manage a home. They arrived to their homes completely disoriented, without the slightest idea of how to prepare meals, how to select the products at the market, given their quality and price, and, ultimately, unable to plan and serve menus. Her book addressed all of those areas and she

[508] Josefina Velázquez de León, *La Cocina de la Recién Casada*. Tomo I, 2a ed. (Mexico, DF: Ediciones J. Velázquez de León, 1962).

only hoped it would help them maintain the happiness of their homes. After all, she concluded, "all women, regardless of her social position and activities, must have in mind that marriage constituted her destiny's natural goal and should not forget all the training that its future family required.

Fig. 28 Covers of *La Cocina de la Recien Casada*, Vol. I & Vol. II
Source: Josefina Velázquez de León, *La Cocina de la Recién Casada*. Tomo I, 2a ed. (Mexico, DF: Ediciones J. Velázquez de León, 1962); [1] Josefina Velázquez de León, *La Cocina de la Recién Casada*. Tomo II, 2a ed. (Mexico, DF: Ediciones J. Velázquez de León, 1962).

The commodification of culinary knowledge meant that the training entailed to become an ideal housewife was no longer transmitted from one generation to the next, but rather from professional experts to newly and future housewives. This transfer of knowledge was done through print culture (cookbooks, advice manuals, women's magazines), mass media (radio, TV) and dedicated venues (culinary and vocational schools).[509] By the mid 1930s, the Sayrols Publishing Company, for instance, claimed they had the best cuisine and pastry cookbook collection for the housewife's library. Among these were two of Marichu's books, as well as other domestic and foreign ones.[510]

[509] On vocational education see Patience A. Schell, "Gender, Class, and Anxiety at the Grabiela Mistral Vocational School, Revolutionary Mexico City," in Jocelyn Olcott, Mary Kay Vaughan, and Gabriela Cano, Eds., *Sex in Revolution: Gender, Politics, and Power in Modern Mexico* (Durham: Duke University Press, 2006), pp. 112-126.

Another publisher that contributed to the fertile production of cookbooks in the 1940s was Taller Tipográfico de la Cooperativa Excélsior, of the *Excelsior* newspaper. It published semiyearly the *Enciclopedia del Hogar* (Encyclopedia of the Home), which developed from a mere cookbook into larger publications that were at once housekeeping manuals and cookbooks. Later issues offered detailed design ideas for all the rooms in the house, table setting instructions, party planning tips, and the latest on social etiquette. By 1946, the *Enciclopedia* counted with the collaboration of Virginia Yturbide de Limantour, a costumer designer who had worked in the 1943 films *Divorciadas* and *Ave Sin Nido*.

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[510] María A. de Carbia, *Marichu va a la cocina y recibe con distinción*. 2ª ed. (México, D.F.: Editorial Sayrols, S.A., 1934), and *El numero 2 de Marichu: Lo que toda ama de casa debe saber* (Mexico, DF: Imprenta Patricio Sanz, 1934); Irma Carlota, *La Cocina Moderna* (Mexico, DF: Editorial Sayrols, 1934); Nieves, *Ramillete del Ama de Casa* (Barcelona: Luis Gili, 1935); and Mary Byron, *Libro de Confituras* (Barcelona: Luis Gili, 1928).

Fig. 29 Set of cookbook covers published by *Excelsior*
Sources: Recetario de Cocina Excelsior, Vol. II (Mexico: Excelsior, 1944); *Enciclopedia del Hogar*, Vol. 3 (Mexico: Excelsior, 1940z); *Enciclopedia del Hogar*, Vol. 4 (Mexico: Excelsior, 1940z); *Enciclopedia del Hogar*, Vol. 5 (Mexico: Excelsior, 1945); *La Enciclopedia del Hogar*, Vol. 6 (Mexico: Excelsior, 1946).

Josefina's prolific pen and entrepreneurship spirit placed her in a prominent position in the commodification of culinary knowledge and the construction of the professional housewife. By the 1940s, she had used her cooking school as the platform to build "a virtual publishing empire."[511] For the next two decades she published all her cookbooks under her own publisher: Ediciones J. Velázquez de León. Alongside she also published *El Arte de Cocinar* (the art of cooking), a monthly culinary magazine and

[511] Jeffrey M. Pilcher, "Josefina Velázquez de León: Apostle of the Enchilada," in Jeffrey M. Pilcher, Ed. *The Human Tradition in Mexico*. (Wilmington, DE: Scholarly Resources, 2003), p. 202.

collaborated cooking columns to several women's magazines and some of the city's leading dailies.[512] Josefina sought to reach housewives outside the country's capital through her publications and a correspondence certificate program. For a two-year period, students enrolled in the program received a monthly package with several lessons with detailed instructions and photographs. At the end of the course, those students who felt they had dominated the required knowledge could travel to the capital to take an exam administered by a judging committee. Successful candidates received a diploma that accredited them as "Culinary Art experts."

Housekeeping as the bread and butter of the housewife's role was discussed as a reflection and, oftentimes, as an extension of her own personality. For Virginia Yturbide de Limantour the house was "like a book, and everyone who went beyond the doorstep could read its thoughts."[513] A family's most outstanding touch of refinement took place at the dinner table. It was there that a family's education, sophistication and good manners were revealed.[514] The housewife, as the basis of success, was to dedicate to it all of her attention. A well-set table, claimed the note, was always attractive and welcoming. Luxury was not needed. Instead, it entailed the houserwife's utmost care, taste, attention to detail, harmony in the colors and overall, the good presentation of dishes correctly served. The table deserved the special attention of the housewife since afterall it was there that "a woman's elegance, beauty and grace was to be admired."[515] One need not be

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[512] Among these were *El Universal*, *Excelsior*, *Negro y Blanco*, and *Socia*.

[513] Virginia Yturbide de Limantour, *Enciclopedia del Hogar: La Personalidad de una Casa*, Tomo VII (Mexico, DF: Taller Tipográfico de la Cooperativa Excélsior, 1946), p. 9.

[514] "La Mesa," *Recetario de Cocina Excelsior: segundo recetario de cocina*. (Mexico, DF: Taller Tipográfico de la Cooperativa Excélsior, 1944), p, 9.

a great observer to see that elegance, just as the lack of education and vulgarity, were noticeable at the table. Thereby, it was essential for guests to have a good first impression even on minor details.

A businesswoman at heart, Josefina was only halfheartedly critical of what industrialization had done to foodstuffs. Among her first sponsors were Productos Oro, a bakery products company, and Empacadoras de Calidad (Quality Packing Company), which sold concentrated tomato puree.[516] As a recognized culinary expert, packaged food companies and government agencies to develop booklets with recipes based on their products approached Josefina.[517] She collaborated with Fuertomate brand that specialized in canned tomatoes.[518] Given the centrality of tomatoes in the national cuisine and the taste and quality she had found in Fuertomate "Etiqueta Negra," Josefina claimed that the product would save housewives, who were always busy, both effort and time in "selecting, washing, peeling, crushing, straining and cooking." Nestlé also approached her to serve as a judge in their nationwide contests that asked housewives to mail-in

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[515] "El arte de la buena mesa," *Enciclopedia del Hogar: tercer tomo del recetario de cocina de Excelsior*. (Mexico, DF: Editorial Excelsior, 1944), p, 28.

[516] She also held free demonstration classes (decoration of modern cakes, artistic gelatins and novel pastries) every Wednesday. The items prepared during the class were ruffled among attendees at the end of class. Invitations were made available to anyone who acquired an issue of *Arte de Cocinar* and those who spent one peso in Oro products bought in the school's store.

[517] The Compañía Exportadora e Importadora Mexicana, S.A. (CEIMSA), the State Food Agency, with the collaboration of Josefina, published fourteen modest recipe pamphlets, each with thirty recipes of popular dishes. These were later compiled and published under the title *420 recetas de platillos populares mexicanos* (Mexico, DF: CEIMSA, 1960). The agency claimed the1.6 million copies of were distributed free of charge in working class neighborhoods. For an analysis of the State Food Agency see Enrique Ochoa, *Feeding Mexico: the political uses of food since 1910*. Wilmington, Del: Scholarly Resources, 2000).

[518] Josefina Velázquez de León, *Fuertomate en la cocina, recetario núm. 1*. (Distribuidora del Fuerte, S.A., 1961).

original recipes using their products.[519] She also held demonstration classes in her cooking school in which Nestlé representatives served cups of Nescafe coffee and gave Milo Milk samples to the attendees.[520]

The advantages offered by packaged foods were also extoled in a few of her cookbooks that sought to cater to the fast and busy lifestyle the modern housewife was thought to have. Josefina highly recommended housewives to calculate the time they had to prepare the meals they selected for the day. If they had to go out or had a commitment, they were to select dishes that were easy and short in preparation. *Cocina Instantánea*, for example, was meant to help housewives to prepare a quick meal using canned and packaged products saving them time, labor and servants.[521] Today, she wrote, we very much envy our grandmothers who had servants and did not have to cook. But had they known the diversity of the products we now have, she said, perhaps they would be the ones to envy us. *Cocina Instantánea,* she made clear, was not a cookbook, but rather a book with suggestions, practical and simple ideas on how to prepare dishes in a few

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[519] Nestlé published cookbooks with a selection of the thousands of recipes submitted by women throughout the country. These recipes were tested in the Sala Científica Nestlé (the scientific Nestlé showroom) and judged by a committee of expert judges. Among those who participated in the several held contests were Lupe H. de Muñoz de Cote, graduate of the Philadelphia School of Home Economics and director of the Instituto de Repostería Nestlé; Carmen Ramírez del Corro, and Clementina Cerrillo, instructors at the Escuela Profesional de Trabajadoras Sociales y de Enseñanza Domestica; Concepción G. de Kapmann, a General Electric Home Economics expert; and Miguel Garnica Espinosa, chef at "Paolo" restaurant and who had cooked for all Mexican presidents. See *Postres Nestlé: Una maravilla de la Repostería Moderna* (Mexico, DF: Nestle Mexico S.A.)*; Postres Nestlé, núm. 2* (Mexico, DF: Nestle Mexico S.A.); and *Postres Nestlé, núm. 3* (Mexico, DF: Nestle Mexico S.A.).

[520] For a thorough assessment of the nutritional debate and commercial promotion of instant coffee and milk consumption see the work of Sandra Aguilar-Rodríguez, "La mesa está servida: comida y vida cotidiana en el México de mediados del siglo XX," *Revista de Historia Iberoamericana*, Vol. 2, No. 2 (2009), pp. 52-85; and "Nutrition and Modernity: Milk Consumption in 1940s and 1950s México," *Radical History Review*, Issue 110 (Spring 2011), pp. 36-58.

[521] Josefina Velázquez de León, *Cocina Instantánea: Ideas practicas para preparar rápidamente con latas y productos preparados platillos de buen sabor, dulces y repostería*. (Mexico, D.F.: Ediciones Velázquez de León, 1949). Another similar cookbook was her *Cocina al minuto* (Mexico, D.F.: Ediciones Velázquez de León, 1956).

minutes for those rushed occasions in which there was not enough time to cook. The reader was to find recommendations of how to prepare meals quickly using canned foods and other packaged foods, as well as others that required a little more time. Nonetheless, those dishes were to be served with salsas and other condiments making them presentable and hiding the very fact that they had been prepared using canned foods as a base. By doing so, Josefina argued, the housewife would not feel ashamed to serve them even if she had saved herself hours of labor. These types of dishes were not to replace traditional cooking and were only recommended in cases of emergency. Our customs, Josefina cautioned, would not adapt to such a diet. With the help of these new products, modern appliances and with some good will, she argued, "We could easily live up to our responsibilities as housewives both in the home and in society." With the help of canned and packaged foods, then, housewives could engage in social activities such as those depicted in the front cover of the *Cocina Rápida para la Mujer Moderna* (fast cooking for the modern woman) without neglecting their central role as homemakers.[522]

Domesticating modernity, modernizing tradition

Josefina's culinary patriotism did not prevent her from incorporating packaged and canned foods, and modern kitchen appliances. Instead, she played an important role mediating their incorporation in the elaboration of national dishes. It was through her cooking advice and demonstrations that she directly influenced how electrical appliances were domesticated. The term "domestication" has been used to describe the processes a given technological object goes through before being integrated into daily life. This

[522] Josefina Velázquez de León, *Cocina Rápida para la Mujer Moderna: Selección de recetas de rápida confección, buen sabor y bonita presentación, propias para la mujer moderna* (Mexico, D.F.: Ediciones Velázquez de León, 1940z).

integration involves "a taming of the wild and a cultivation of the tame."[523] Through these processes technologies are transformed from "unfamiliar, exciting, and possible threatening things," and "into familiar objects embedded in the culture of society and the practices and routines of everyday life."[524] These processes include the "symbolic work, in which people create symbolic meanings of artifacts and adopt or transform the meanings inscribed in the technology; practical work, in which users develop a pattern of use to integrate artifacts into their daily routines; and cognitive work, which includes learning about artifacts."[525] As the following discussion shows, Josefina was influential in each of these processes.

In the foreword of her cookbook *How to cook in Modern Appliances,* Josefina shared that many housewives had approached her with a dilemma.[526] In recent times pressure-cooking had gained popularity, and almost every housewife, claimed Josefina, had bought a pressure cooker along with blenders, mixers, Miracle molds and other additional appliances. Most of these housewives had shared with her that they "did not know how to use them."[527] They complained that they could not prepare the Mexican-

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[523] Roger Silverstone and L. Haddon, "Design and the domestication of information and communication technologies: Technical change and everyday life," in *Communication by Design*, ed. R. Silverstone and R. Mansell (Oxford: Oxford University Press, 1996), p. 60.

[524] Roger Silverstone and Eric Hirsch, eds., *Consuming Technologies: Media and Information in Domestic Spaces* (New York: Routledge, 1992); and Merete Lie and Knut H. Sørensen, 1996. *Making technology our own? Domesticating technology into everyday life*. (Oslo: Scandinavian University Press, 1996).

[525] Lie and Sørensen; and Knut H. Sørensen, M. Aune, and M. Hatling, "Against linearity: On the cultural appropriation of science and technology," in *Between Understanding and Trust*, ed. Meinolf Dierkes and Claudia von Grote (Australia: Harwood Academic, 2000). Cited by Nelly Oudshoorn, and T. J. Pinch, *How users matter: the co-construction of users and technologies*. (Cambridge, Mass: MIT Press, 2003).

[526] Josefina Velázquez de León, *Como cocinar en los aparatos modernos*. (México, D.F.: Ediciones Velázquez de León, 1950).

style dishes their families ate on a daily basis. They believed one could only cook foreign-style dishes, which offered them no help. Housewives have acquired these "unfamiliar," but "exciting" objects, but these were yet to be integrated into the practices and routines of these housewives' everyday life. Recognizing the potential for expanding her culinary grasp, Josefina set out to solve her pupils' quandary.

For a two-year period, Josefina assiduously studied how to make these modern appliances useful for the nation's housewives. That is, she engaged in the process of "practical work" in order to develop "a pattern of use" that was culturally acceptable and thereby, could be integrated into these women's daily routines. Josefina was now ready to present the results of her study: two hundred of the most popular food and dessert recipes already practiced in the country. These had been modified and approved by the author. In addition, the cookbook, product of her study, contained helpful illustrations with easy and thorough instructions on how to use each individual appliance, how to wash and take care of them. The book, as the "housewife's best counselor," was to show her the handiness of modern appliances.

How to cook in Modern Appliances was only part of Josefina's effort to facilitate the "cognitive work" necessary for the integration of these appliances. She also held free demonstration classes in her cooking academy. In these classes, she claimed, housewives would learn "to cook in the way present times demanded."[528] The Burpee bain-marie, the Birtman blender, and the LAMEX oven among others were for sale at the academy and the purchase of any of these appliances, granted the buyer four tickets for four of these demonstration classes. People residing outside the capital city, instead received a free

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[527] "Como cocinar en aparatos modernos," *El Arte de Cocinar*, num. 45 (May 1949), p. 23.

[528] Ibid, 32.

copy of the cookbook. Dedicated demonstration classes were held on Fridays for housewives interested in the portable LAMEX oven, which among other advantages was entirely manufactured in the country and could be used with any heating source (coal, gas, firewood, petroleum, etc.). There were also the "LAMEX radio concerts" aired on Tuesdays and Saturdays on the XEW radio station.[529]

Josefina's practical and cognitive work for the incorporation of kitchen appliances has an earlier but little recognized predecessor. Luis Álvarez L., a México City engineer and entrepreneur, had been hard at work since the 1910s. Álvarez centered his business activities around the "Ideal Electrical Oven," which he initially promoted via demonstrations in the Mercado de Toluca.[530] He later published two cookbooks *Repostería Moderna* and *Pasteleria y Repostería Moderna*.[531] These cookbooks were advertised as a selection of practical and economic recipes "specially written for the clients of the Ideal electrical oven," and which had been "experimented in the pastry classes held in the store."[532] Álvarez's wife offered these pastry classes in the late 1920s to clients who purchased their electrical ovens.

Josefina understood that each housewife had her own favorite recipes, so she invited them to adapt these to the new method of cooking at their own learning pace. After all, she believed that each woman "should understand how and why she does what

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[529] *El Arte de Cocinar*, num. 46 (Sept. 1949), p. 10.

[530] Interview made by the author to Fernando Alvarez, grandson of Luis Alvarez.

[531] *Repostería Moderna* was in its second edition in 1930 and *Pastelería y Repostería Moderna* was first published in 1937.

[532] According to Fernando Álvarez, although the books were published under the authorship of his grandfather, the recipes had actually been compiled and tested by his grandmother.

she does." Only in that way would "cooking become a science in her hands."[533] Josefina had done plenty of experimentation of her own with modern appliances and her lengthy 1950's *How to cook in Modern Appliances*, was followed by a second volume three years later. In both volumes, the Birtman blender was promoted as the blender for the "Mexican home" and as one of the electrical appliances that offered the most aid to the housewife."[534] Among other attributes, the Birtman grinded and mixed chilies, spices and other ingredients for the preparation of Mole, tamale fillings and other national dishes. It also grinded cooked maize for fine *atoles*.

Figure 1 below shows a housewife, neatly dressed with a white apron and a chef's hat, standing before a large working station, absorbed reading a recipe in her hand. Scattered across the working station are both modern and traditional cooking implements. There is a large clay pan with pieces of fruit on its left. To its right there is a wooden spatula. The Birtman blender sits on the forefront of the station. In the left-top corner, an elderly woman wearing eyeglasses is holding a note on her right hand that reads "ancient desserts." With her left hand she is passing down two more notes, which unfortunately are too blurry to read. The image suggests the transmission of culinary knowledge from one generation to the other via written recipes. The elderly woman, perhaps the grandmother of the housewife reading the recipe, is passing down recipes to her descendant, who now with the aid of the Birtman blender is able to prepare old desserts. It is telling that there is another note that reads "sweets" inside the Birtman itself. With it

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[533] Josefina Velázquez de León, *La Cocina de la Recién Casada*. Tomo I, 3rd ed. (Mexico, DF: Ediciones J. Velázquez de León, 1968), p. 49.

[534] Josefina Velázquez de León, *Como cocinar en los aparatos modernos,* Vol. II (México, D.F.: Ediciones Velázquez de León, 1953), p. 123-4.

the triangle is complete: knowledge passed down from previous generations in written form serves as the basis for the preparation of desserts thanks to the aid of the blender. The blender stands as the tool that enables the new generation to preserve culinary knowledge. The caption on the bottom of the image reads, "thanks to the Birtman blender we are able to savor the dishes and desserts our grandmothers made."[535]

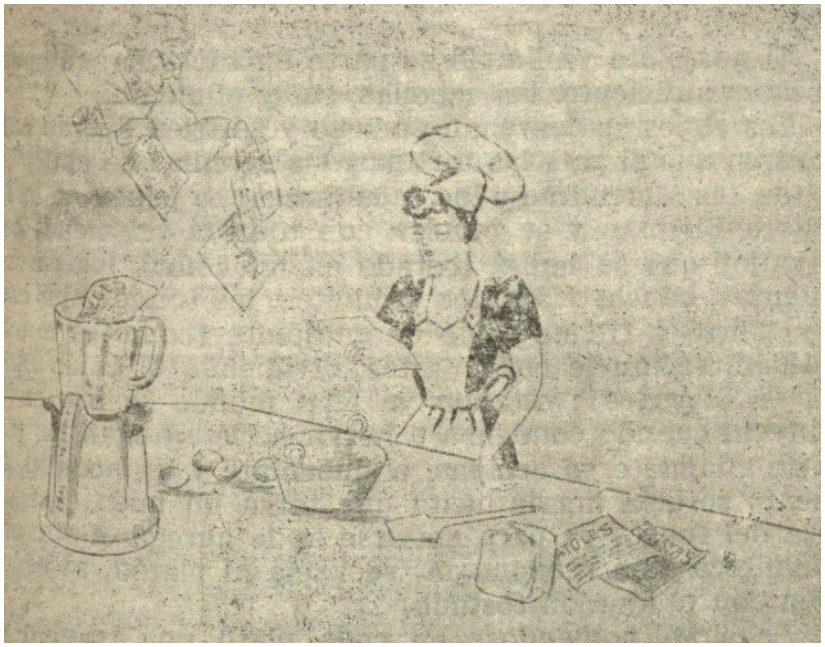

Fig. 30: Meeting culinary heritage and modern technology
Source: Josefina Velázquez de León, *Como cocinar en los aparatos modernos,* Tomo I, 2nd ed. (México, D.F.: Ediciones Velázquez de León, 1950),

In the second figure, the same housewife stands behind a large table in conversation with a nun dressed in habit. The nun's hands suggest she is in the midst of an explanation the housewife attentively listens to. On top of the table there are two nicely decorated dishes sitting right to the Birtman blender. The image's caption reads "the ancient desserts from the convents, a Mexican pastry heritage, are easily recreated in

[535] Josefina Velázquez de León, *Como cocinar en los aparatos modernos,* Tomo I, 2nd ed. (México, D.F.: Ediciones Velázquez de León, 1950), p. 261.

the Birtman blender."[536] The Birtman, then, could be read as a tool to access a patriotic and religious culinary heritage.[537]

Fig. 31 Nun provides instructions to housewife
Source: Josefina Velázquez de León, *Como cocinar en los aparatos modernos,* Vol. I, 2nd ed. (México, D.F.: Ediciones Velázquez de León, 1950).

Figure 3 below invited readers to enjoy the exquisite cured *pulques* made in the Birtman blender. The recipe for almond cured pulque called for peeled almonds, sugar, orange juice and ½ liter of pulque to be thoroughly blended. The other half-liter was to be added later and then set aside to rest in a cool place for two hours before being served.[538] Pulque consumption, long a controversial subject in the country's history, was made into

[536] Ibid, 272.

[537] For culinary nationalism see Jeffrey M. Pilcher, *Que vivan los tamales! Food and the making of Mexican identity* (Albuquerque: University of New Mexico Press, 1998); and José Luis Juárez López, *Nacionalismo culinario: La cocina mexicana en el siglo XX*. (Mexico, DF: Consejo Nacional para la Cultura y las Artes, 2008).

[538] Velázquez de León, *Como cocinar en los aparatos modernos*, p. 284.

a source of pride that connected the countryside and the modern kitchen.[539] The image tacitly connects the two spaces by having a man, with pronounced indigenous features, carry a pulque jar into the kitchen. In his background, a man kneeling before a maguey plant appears to be extracting the *aguamiel*. The indigenous man who has entered the modern kitchen pours the pulque into the Birtman blender under the supervision of the distinguishably dressed housewife.

Fig. 32. Preparing *pulque curado in* electric blender
Source: Josefina Velázquez de León, *Como cocinar en los aparatos modernos*, Vol. I, 2nd ed. (México, D.F.: Ediciones Velázquez de León, 1950).

[539] For a thorough analysis on the history of pulquerías see María Aurea Toxqui Garay, ""El recreo de los amigos." México City's pulquerías during the liberal Republic, 1856-1911," (Ph.D. diss., University of Arizona, 2008); For pulque consumption as a popular practice see Diego Pulido Esteva, "!A su salud! Sociabilidades, libaciones y practicas populares en la Ciudad de México a principios del siglo XX," (Ph.D. diss., Colegio de México, 2012).

Fig. 33: Juxtaposition of backward and modern cooking ways
Source: Josefina Velázquez de León, *Como cocinar en los aparatos modernos,* Vol. I, 2nd ed. (México, D.F.: Ediciones Velázquez de León, 1950).

The last image reads, "the Birtman blender has simplified a lot of work!" Unlike the previous discussed scenarios, this image juxtaposes two contrasting activities. The image invites the reader to carry out a linear reading. On the left side, a chubby woman, with indigenous facial features, and a sad expression is kneeling on the floor behind a large clay casserole. She has one hand inside the casserole working what appears to be dough. She is scratching her head with the other hand, probably an indication of poor personal hygiene or even the presence of lice. The reader can only imagine that the second hand would eventually go into the casserole to finish mixing the dough. Her image instead of being a source of pride and inspiration, it stands as a unhygienic and backward looking past. On the right side of the image, behind a counter, a tall, slim, fair complexion woman stands appropriately dressed to cook (with both an apron and an

chef's hat), and happily supervises a Birtman mixer with one hand. Unlike her counterpart on the left, her hands do no touch the dough, assuring the hygienic handling of food.

Traditional cooking implements when included in promotional images were either introduce reduced in size or became outright targets of the ads. In *La Cocina Instantánea*, Josefina included the image below of a woman crying while chopping onions behind a counter. On the counter there are also the molcajete and the metate. Although there is no need to have these implements there, as the source of the woman's tears are the onions and not the stone instruments, they seem to be there to complement the image of dreadful times when her time in the kitchen was full of troubles. Indeed, the caption that divides the image reads, "avoid old troubles." On the bottom-right corner stands the way to avoid them: canned and packaged foods. No longer was the housewife to suffer away her time in the kitchen handling old-fashioned tools that made her miserable, instead concentrated tomato puree and dried parsley were now at her disposal. An ad from Glasbake promotes crystal ovenware as the "new monarchs of the kitchen and the dining room." Each new individual crystal dish is making its way into the kitchen, while on the background chipped earthenware pots and teapot are running away from the kitchen. The ad promised the female consumer that the crystal ovenware would be a source of pride in the kitchen, as they were to bring beauty, speed and economy to her home.

The Birtman was promoted as "magic in the kitchen." This was part and parcel in the symbolic work needed to domesticate the blender in the national kitchen imagery. As the discussion of the images of the Birtman blender and mixer shows, its symbolic meaning was transformed as one that mechanized culinary tasks (grinding, milling,

mixing, etc.) to one that served to reconnect modern housewives with their own and the nation's culinary past. In doing so, the symbolic meanings of the images found in *How to cook in Modern Appliances* transformed the meanings inscribed in the Birtman into a tool that allowed housewives to access and safeguard the honorable and prideful culinary knowledge of times bygone. At the same time, it disdained the nation's culinary technological heritage (i.e. molcajete and metate). In other words, it selectively advocated for the continuity of the nations' culinary heritage by safeguarding knowledge at the expense of technologies deemed as backward.

Conclusion

Publicists, used by manufacturers, retailers and electric companies to promote electric living were not the only agents that shaped the construction of the ideal housewife and the ideal modern kitchen. Home economists, home advisors, and cookbook authors directly participated in the commodification of housekeeping knowledge and actively shaped the construction process of the modern housewife and the modern home. Josefina played a significant role in these constructions as she mediated the rhetoric of modern living by translating domestic technology into cultural terms understandable to the local population. That is, she contributed to the domestication of electrical appliances into desirable items with desired consumer values that catered to contemporary social anxieties. To a certain extent, then, she facilitated the desirability of electrical appliances as markers of social class and modern identities. She also contributed in reinforcing the consumption of domestic technology as a feminine activity. This process then was a gendered process that reinforced gender norms at the same time

that sought to allow the housewife to enjoy the fruits of modernity within the safe haven of the home.

CONCLUSION
LA ELECTRICIDAD ES NUESTRA

On September 27, 1960 a papier-mâché male figure hanged from a crane outside the Presidential Palace in Mexico City. The effigy's pale face starkly contrasted with its black suit and top hat. A large white moneybag rested securely between his hands. The bag along with the pants had been copiously covered with dollar signs while the blazer flaunted a string of fireworks and a sash that went up and down its back. On one side it read "Mexican Light and Power Company," the name of the electric company that had supplied electricity to the capital for over five decades. On the other side, it defiantly announced ¡No hasta luego, sino adiós para siempre! (Not see you later, but goodbye forever!). The effigy soon went up in flames.

An atmosphere of jubilation filled the Zócalo and the surrounding streets. Thousands had made their way to the plaza in what seemed to be a never-ending number of labor union workers that had come out to applaud the nationalization of the electric industry. Unquestionably, most represented the *Sindicato Mexicano de Electricistas* (Mexican electrical workers union), who along many others had made their procession from the Veronica Building, one of the electric company's former properties. The official ceremony to mark the transfer of the company to the new governing board had been staged in the main entrance to the building. Delegations of workers had been gathering outside the Veronica since early in the morning with their insignias and banners welcoming the industry's nationalization. Antonio Ortiz Mena, secretary of treasury, crowned the forty-five minute ceremony with the hoisting of the national flag amidst

balloons, salutes and whistles that accompanied the singing of the national anthem. The scene was later described as a vigorous explosion of patriotism.[540]

Figure 34: Effigy depicting the Mexican Light and Power Company
Source: *Lux, La Revista de los trabajadores*. XXIX, No. 85 (Sep., 1960)

[540] *Lux, La Revista de los trabajadores*. XXIX, No. 85 (Sep., 1960), pp. 4-5.

Fig. Workers with banner celebrating the nationalization of the industry.
Source: *Lux, La Revista de los trabajadores*. XXIX, No. 85 (Sep., 1960)

Upon the conclusion of the ceremony the delegations headed toward the Zócalo for the day's main event. Workers carrying placards with President Adolfo López Mateos' image packed the plaza. Nothing could compare, nonetheless, with the massive

banner the SME had printed for the occasion. Its nationalistic tone was set at the top that energetically read Mexico for Mexicans! At its center, the President's gracious face at a forty-five degree angle directs the viewer's attention to the foreground where his muscular fist is firmly closed around a electrical switch. The enlargement of the fist to relatively the same size as the President's face reinforces the power of the image. The raised lever of the switch, which is used to control the current of electricity in a circuit, stands as a metaphor for the industry's mexicanization. The banner's message, nonetheless, could not be delivered without the help of those citizens in attendance, who held up the banner up for the rest to see and read that the message it delivered.

The crowd welcomed the President, as he stepped onto the presidential balcony, with an ovation mixed with shouting, fireworks, *matracas* and the bells from the Cathedral. By taking over the Mexican Light and Power Company, López Mateos declared, the nation had concluded a long struggle carried out by the people to have in their hands the electric energy generated in the country.[541] Electricity belonged to Mexico, he declared and its nationalization had been a goal achieved by the people in the Revolution's path. He invited them to accelerate its industrialization in order for the benefits of electric energy to enter the homes of each and everyone in the country.

In his speech after the President, Luis Aguilar Palomino, secretary general of the SME, eloquently voiced the union's stance. They hoped the transmission cables that crossed the nation's valleys and sierras would transmit the voice of progress.[542] The objectives of the industry's nationalization, they believed, were at par with those spelled

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[541] *Excelsior*, 28 September 1960.

[542] *Lux,* p. 14.

out by the heroes of the country's Independence, of the Reform, and of the Revolution, and only a revolutionary government could provide the powerful stimulus for the country's progress.[543] The government of López Mateos, he declared, was a revolutionary one. As the President, cabinet members and the company's new governing board returned to the presidential palace, the Judas effigy that ridiculed the former foreign company was set on fire.

References to the potential of electricity for the country's industrialization and material progress peppered the speeches delivered throughout the ceremonies held that September echoed those made over seven decades before by Justo Sierra in the speech that granted electricity Mexican citizenship. Much had changed in the country, but hopes for an industrialized nation were still closely identified with the invisible fluid. Electricity as a technology was no longer the "beautiful stranger" that needed to be captured by students at the National Preparatory School. In the seventy-four years that separated both events electricity had become a household name.

Mexico had answered the call of the electric revolution taking the world by storm in the last quarter of the nineteenth century. Indeed, up to the 1920s, its electrification process had closely followed those experienced by countries leading the revolution. For much of that period, this process had been unfolding in an uncoordinated manner. Industrial pockets throughout the country had initiated the electrification of their activities and public electric lighting had been gaining terrain over other types of energy sources. By the end of the Porfiriato, more than one hundred relatively sizeable electric companies dotted the national map. A majority of the applications had been in control of

[543] Ibid, 20.

Mexicans.[544] It was not until the turn of the century that the industry became de-nationalized. This study, nonetheless, is not concerned with the generation of electricity per se, but rather with how the technology was consumed, both literally and figuratively.

Unlike other old technologies (railroad, radio, etc.), electricity retained its association as a modern technology. That is, the arrival of electricity to new areas in the country remained crafted in the language of modernity. Campaigns to electrify the countryside after the nationalization of the industry phrased their messages in ways that presented electricity as a civilizing tool. A catalog of the National Chamber of Electric Manufacturing (CANAME), for example, subtitled its publication with the slogan "to electrify is to civilize."[545]

Neither the definition of what electricity was and who could use it, under what terms nor its effects were defined for Mexicans. Rather, they defined them and in doing so, in many ways changed the technology itself. For Porfiristas, the international recognition of electricity as a symbol of modernity served their goals in manifold ways. It allowed for the reordering of public space. The malleability of electrical lighting provided a rather easy medium to paint the city modern, to give it a facelift, to congratulate the messenger while recording its propagation to showcase its achievements abroad among modern sister countries. The electrification of industrial activities revolutionized many areas not only in terms of profit making but also in the ways workspaces were transformed and experienced by those who manned the factories and workshops. Electric traction brought to light the dark side of the new technology. It

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[544] Alma Parra, "Fuentes para el estudio de las primeras compañías británicas de electricidad en Mexico," *América Latina en la Historia Económica: Boletín de Fuentes, Industria Eléctrica* No. 8 (Jul.-Dic., 1997), pp. 31-37.

[545] *Catalogo de productos: CANAME: electrificar es civilizar*. (Mexico: La Camara, 1963).

exposed the violence of industrialized time, the resourcefulness and anxieties of those coping with the fears excitement and opportunities brought about by a faster mode of travel. The discussion, debate, and outrage provoked were expressed in cultural terms particular to the city.

Users also actively conditioned the entrance of electricity into semi-private and private spaces. Indeed, they questioned its nature and appropriation. The terms of consumption established by electric companies were probed and many times challenged by consumers. The script penned down by companies and authorities alike on the proper use of the technology was tested even before the ink dried. Electrical knowledge could not be monopolized opening the door for the open trade of skills and devices in a market critical of the rules of the game. The policing of consumption was not predetermined, but rather emerged in order to respond to those who contested scripted consumption. But not only were consumption scripts constantly altered, but sales pitches for electricity as well.

Social anxieties after the revolutionary permeated the sale and consumption of household articles. The rhetorical and commercial construction of modern women who were to inhabit modern spaces inside the safe haven of their homes was quick to exploit class and racial anxieties. This construction, nonetheless, could not be successfully imported wholesale from abroad. Associations between technologies and spaces (social/physical) had to be reformulated by mediators who could domesticate exciting, but foreign and unknown items. Home advisors and cookbook writers could navigate murky waters in their efforts to make technologies desirable and palatable at home. To do so they had to re-write the scripts employing their own cultural baggage. The electrical message, then, could and was oftentimes lost in translation.

The histories this study uncovered about the electrification process as experienced by users reveals not an audience of spectators that passively welcomed, rejected, consumed or all three a foreign energy. Rather, these case studies have revealed many unknown historical actors who got up from their seats, jumped on stage and re-wrote scripts. These electrifying agents shaped not only their experiences with the technology, but oftentimes transformed the way the technology was used and understood.

When President López Mateos declared, "*la electricidad es del pueblo*," he had blatantly denied the ways in which Mexicans had shaped the electrification process the country had so far experienced. His account, and that of many who participated in the ceremonies held to memorialize the nationalization of the industry, of that process was limited, to say the least. The rhetorical purpose of his construal was understandable as far as the more victimized the people appeared at the hand of money-sucking foreigners, the greater the laurels were for the man and the administrations that came to liberate them. The Mexican Light and Power Company had indeed conditioned the consumption of electric energy in the capital through their rates, limited investments and quality of their service. The experience of users and nonusers of electricity had been to a certain extent influenced by the makings of this company, but their experienced was never limited to their interaction with the MLP. Their interactions took place in a much wider context of use, one in which they themselves had been electrifying agents.

REFERENCES

Archives and Libraries

Archivo General de la Nación, Mexico City
Instrucción Publica
Ramo Secretaría de Communicaiones y Obras Públicas
Patentes y Marcas
Tribunal Superior de Justicia del Distrito Federal

Archivo Historico del Distrito Federal, Mexico City

Archivo Histórico de la Facultad de Medicina, Mexico City
Biblioteca Dr. Nicolás León
Fondo Escuela de Medicina y Alumnos

Biblioteca Miguel Lerdo de Tejada, Mexico City

Fundación Herdez, Mexico City
Biblioteca de la Gastronomía Mexicana

Sindicato Mexicano de Electricistas (SME), Mexico City
Biblioteca

Universidad Nacional Autónoma de México, Mexico City
Biblioteca Nacional
Hemeroteca Nacional

University of New Mexico, Albuquerque
Baca Family & Bueno Foods Mexican Cookbook Collection

Periodicals

American Machinist
Boletín de Instrucción Publica
Boletín de la Asociación Financiera Internacional
Diario de los Debates
Diario de Jurisprudencia del Distrito y Territorios Federales
Diario del Hogar
Diario Oficial
El Alacrán
El Arte de Cocinar
El Cómico
El Correo de las Doce

El Correo Español
El Demócrata
El Diario
El Economista Mexicano
El Estudio
El Imparcial
El Monitor Republicano
El Mundo Ilustrado
El País
El Partido Liberal
El Popular
El Siglo Diez y Nueve
El Tiempo
El Universal
Electric Railway Journal
Electrical Merchandising
Engineering Mechanics
Excelsior
Gaceta Médica de México
Idaho Daily Statesman
La Patria
La Voz de México
Lux
Mexican Financier
Mining and Scientific Press
Monthly Bulletin of the International Bureau of the American Republics
Nueva Era
Monthly Bulletin of the International Bureau of the American Republics
Popular Electricity Magazine
The Mexican Herald
The Mexican Mining Journal
The Poultry World
The Two Republics

Secondary Sources

420 recetas de platillos populares mexicanos. Mexico: CEIMSA, 1960.

Adams, Judith A. "The Promotion of New Technology Through Fun and Spectacle: Electricity at the World's Columbian Exposition." *Journal of American Culture* 18:2 (1995), pp. 45-55.

Agostoni, Claudia. *Monuments of Progress: Modernization and Public Health in Mexico City, 1876*-1910. Calgary: University of Calgary Press, 2003.

Aguilar-Rodriguez, Sandra. "Cooking Modernity: Nutrition policies, class and gender in 1940s and 1950s Mexico City." *The Americas* 64:2 (2007), pp. 177-205.

_____. "La mesa está servida: comida y vida cotidiana en el México de mediados del siglo XX." *Revista de Historia Iberoamericana* Vol. 2, No. 2 (2009), pp. 52-85.

_____. "Nutrition and Modernity: Milk Consumption in 1940s and 1950s México." *Radical History Review*, Issue 110 (Spring 2011), pp. 36-58.

Aguirre, Carlos and Robert Buffington, eds. *Reconstructing Criminality in Latin America*. Wilmington: Scholarly Resources, Inc., 2000.

_____ and Gilbert M. Joseph, Eds., *Crime and Punishment in Latin America: Law and Society Since Late Colonial Times*. Durham: Duke University Press, 2001.

Alexander, Anna Rose. "Quotidian catastrophes in the Modern City: Fire Hazards and Risk in México's Capital, 1860-1910." Ph.D. diss., The University of Arizona, 2012.

Alvarez L., Luis. *Pastelería y repostería moderna: selección de recetas prácticas y ecónomicas, escritas especialmente para las clientes de los hornos eléctricos "Ideal", y perfectamente experimentadas en las clases de repostería que se dan en esta casa diariamente a las referidas clientes*. México: L. Alvarez L, 1937.

Annual report. Mexico: Mexican Light and Power Company, 1931.

Arizpe, Rafael R. *Estadística de las aplicaciones de la Electricidad en la Republica Mexicana*. Mexico: Tip. y Lit. "La Europea," 1900.

_____. *El Alumbrado Público: Estudio Histórico*. Mexico: Tip. y Lit. "La Europea," 1900.

Armstrong, Christopher and Vivien H. Nelles. "La empresa corporativa en el sector de servicios públicos: el desempeño de las compañías canadienses en México y en Brasil, 1896- 1930." In *Las inversiones extranjeras en América Latina, 1850-1930: Nuevos debates y problemas en historia económica* comparada, edited by Carlos Marichal. Mexico City: El Colegio de México, Fideicomiso Historia de las Américas, Fondo de Cultura Económica, 1995.

Avíles-Galán, Miguel Ángel. "*A todo vapor*: Mechanisation in Porfirian Mexico. Steam power and machine building, 1862-1906." Ph.D. diss., The University of British Columbia, 2010.

Bailey Glasco, Sharon. *Constructing Mexico City: Colonial conflicts over culture, space and authority*. New York, Palgrave Macmillan, 2010.

Barton, Mary. *Impressions of Mexico with Brush and Pen*. New York: The MacMillan Company, 1911.

Bazant, Jan. *Alienation of church wealth in Mexico social and economic aspects of the liberal revolution, 1856-1875*. Cambridge, England: University Press, 1970.

Beatty, E. *Institutions and Investment: The Political Basis of Industrialization in México before 1911*. Stanford: Stanford University Press, 2001.

Beauchamp, K. G. *Exhibiting Electricity*. London: The Institution of Electrical Engineers, 1997.

Beezley, William H. *Judas at the Jockey Club and other episodes of Porfirian Mexico*. Lincoln, NE: University of Nebraska Press, 1987.

_____, Cheryl English Martin, and William E. French, eds. *Rituals of rule, rituals of resistance: public celebrations and popular culture in Mexico*. Wilmington, Del: SR Books, 1994.

Besse, Susan K. *Restructuring Patriarchy: The Modernization of Gender Inequality in Brazil, 1914-1940*. Chapel Hill: University of North Carolina Press, 1996.

Best, Alberto. *Noticia sobre las Aplicaciones de la Electricidad en la Republica Mexicana*. Mexico: Impresora de la Secretaria de Fomento, 1889.

Bijker, W. E. *Of bicycles, bakelites, and bulbs: Toward a theory of sociotechnical change*. Cambridge, MA: MIT Press, 1995.

Blackwelder, Julia Kirk. "Urbanization, Crime, and Policing: Buenos Aires, 1880-1914." In *The Problem of order in changing societies: essays on crime and policing in Argentina and Uruguay*, edited by Lyman L. Johnson. Albuquerque: University of New Mexico Press, 1990.

Blake, Mary Elizabeth and Margaret Frances Sullivan. *Mexico: picturesque, political, progressive*. Boston: Lee and Shepard Publishers, 1888.

Bradley, J. R. *Fuel and Power in Latin America*. Washington, D.C.: Department of Commerce, United States Government Printing Office, 1931.

Briseno Senosiain, Lilian. "La fiesta de luz en la Ciudad de Mexico: El alumbrado eléctrico en el centenario." *Secuencia* 60 (2004), pp. 90-109.

_____. *Candil de la calle, oscuridad de su casa: La iluminación en la*

Ciudad de Mexico durante el porfiriato. Mexico City: Tecnológico de Monterrey, Instituto Mora, 2008.

Browen, Grace Owen. *The tour of the 400 to Mexico*. Chicago: Hartzell, Lord Co., 1907.

Brown, Kendall. *A history of mining in Latin America: From the Colonial era to the present*. Albuquerque: University of New Mexico Press, 2012.

Buchenau, Jürgen. *Tools of progress: a German merchant family in Mexico City, 1865-present*. Albuquerque: University of New Mexico Press, 2004.

Buffington, Robert. *Criminal and Citizen in Modern Mexico*. Lincoln: University of Nebraska Press, 2000.

_____ and Pablo Piccato, eds. *True Stories of Crime in Modern Mexico*. Albuquerque: University of New Mexico Press, 2009.

_____. "Tales of Two Women: The Narrative Construal of Porfirian Reality." *The Americas* 55:3 (1999), pp. 391-424.

Bunker, Steven B. "Creating Mexican Consumer Culture in the Age of Porfirio Diaz, 1876-1911." Ph.D diss., Texas Christian University, 2006.

_____. *Creating Mexican Consumer Culture in the Age of Porfirio Diaz*. Albuquerque: University of New Mexico Press, 2012.

Byron, Mary. *Libro de Confituras*. Barcelona: Luis Gili, 1928.

Calderón, Francisco. "Los Ferrocarriles." In *La Historia Moderna de México: El Porfiriato, La vida ecónomica,* edited by Daniel Cosío Villegas. Mexico City: Editorial Hermes, 1955, pp. 483-634.

Campbell, Reau. *Campbell's new revised complete guide and descriptive book of Mexico*. Mexico City: Sonora News Company, 1899.

Campos Aragón, Leticia. Coord., *El modelo británico en la industria eléctrica* mexicana. Mexico City: Siglo XXI editores, 2003.

_____. *La electricidad en la Ciudad de Mexico y área conurbada*. Mexico City: Siglo XXI editores, 2005.

Canudas, Enrique. *Las Venas de Plata en la Histórica de México: síntesis de historia económica, siglo XIX*. Villahermosa, Tabs.: Universidad Juárez Autónoma de Tabasco, 2005.

Carlota, Irma. *La Cocina Moderna*. Mexico: Editorial Sayrols, 1934.

Carson, James S. "The Power Industry." In *Industrialization of Latin* America, edited by Lloyd J. Hughlett. New York: McGraw-Hill, 1946.

Carson, William English. *Mexico, the wonderland of the south*. New York: The MacMillan Company, 1909.

Castro, Joseph Justin "Wireless: radio, revolution, and the Mexican state, 1897-1938." Ph.D. diss., University of Oklahoma, 2013.

Catalogo de productos: CANAME: electrificar es civilizar. Mexico: La Cámara, 1963.

Caufield, Sueann. *In Defense of Honor: Sexual Morality, Modernity, and Nation in Early-Twentieth-Century Brazil*. Durham: Duke University Press, 2000.

Chazkel, Amy. *Laws of chance Brazil's clandestine lottery and the making of urban public life*. Durham, NC: Duke University Press, 2011.

Coatsworth, John H. *Growth against Development: The Economic Impact of Railroads in Porfirian Mexico*. DeKalb: Northern Illinois University Press, 1981.

_____. "Obstacles to economic growth in nineteenth-century Mexico." *The American Historical Review* Vol. 83, No. 1 (1978), pp. 80-100.

Cohen, Manuel Perló. *El paradigma porfiriano: historia del desagüe del Valle de México*. Mexico: Miguel Ángel Porrúa: Programa Universitario del Estudios sobre la Ciudad, Instituto de Investigaciones Sociales, 1999.

Collado, María del Carmen. *La burguesía mexicana: el emporio Braniff y su participación política, 1865-1920*. México: Siglo Veintiuno Editores, 1987.

Compañía Limitada de Tranvías Eléctricos de México. *Alrededor de México: Visita en los carros especiales de la Compañía Limitada de Tranvías Eléctricos*. México: Tipografía y Litografía Müller Hermanos, 1907.

Connolly, Priscilla. *El contratista de Don Porfirio: obras publicas, deuda y desarrollo desigual*. Zamora, Mich.: El Colegio de Michoacán, 1997.

Cooper, Frederic Taber, ed. *An argosy of fables: a representative selection from the fable literature of every age and land*. New York: Frederick A. Stokes Company Publishers, 1921.

de Carbia, Maria A. *1936 Almanaque de La Familia*. México: Editorial Sayrols, S.A., 1936.

_____. *Marichu va a la cocina y recibe con distinción*. 2nd ed. México:

Editorial Sayrols, S.A., 1934.

_____. *El numero 2 de Marichu: Lo que toda ama de casa debe saber*. Mexico: Imprenta Patricio Sanz, 1934.

De Grazia, Victoria. *How fascism ruled women Italy, 1922-1945*. Berkeley: University of California Press, 1993.

de la Garza Toledo, Enrique. *Historia de la industria eléctrica en México, Vol. I & II*. Mexico City: Universidad Nacional Autónoma de México, 1994.

de Orellana, Margarita. "El poder de la memoria fugaz." *Artes de México* 48 (1999).

de Vecchi Bruno and Carmen de de Vecchi. "Primeros ensayos públicos de la luz eléctrica en la Republica Mexicana," *Quipu* Vol. 4, No. 1 (1987), pp. 71-80.

Delbourgo, James. *A Most Amazing Scene of Wonders: Electricity and Enlightenment in Early America*. Cambridge: Harvard University Press, 2006.

Díaz Arias, Julián. *La industria eléctrica y su importancia en la industrialización de México*. Mexico City: Facultad de Derecho y Ciencias Sociales, 1946.

Díaz Molina, Libertad Fidelina."Antecedentes, desarrollo y principales consecuencias de la participación del estado en el desarrollo de la industria eléctrica en México, 1889-1960." Ph.D. diss., Universidad Nacional Autónoma de México, 2012.

_____. "Contra la corriente. La institucionalización de la enseñanza de la ingeniería eléctrica en México, 1889-1930."In *La casa de Salomón en México. Estudios sobre la institucionalización de la docencia y la investigación científicas*, edited by Juan José Saldaña. Mexico: Universidad Nacional Autónoma de México, 2005.

_____. "La formación de los ingenieros electricistas en Mexico y en Cuba, 1889-1940." MA Thesis, Facultad de Filosofía y Letras, UNAM, 2010.

Edgerton, David. *The Shock of the Old: Technology and Global History since 1900*. Oxford: University Press, 2007.

Enciclopedia del Hogar: tercer tomo del recetario de cocina de Excelsior. Mexico: Editorial Excelsior, 1944.

Esposito, Matthew. *Funerals, Festivals, and Cultural Politics in Porfirian Mexico*. Albuquerque: University of New Mexico Press, 2010.

Evans, Sterling. *Bound in twine: The history and ecology of the henequen-wheat complex*

for Mexico and the American and Canadian plains, 1880-1950. College Station: Texas A&M University Press, 2007.

Farnsworth-Alvear, Ann. *Dulcinea in the Factory: Myths, Morals, Men, and Women in Colombia's Industrial Experiment, 1905-1960*. Durham: Duke University Press, 2000.

Francois, Marie Eileen. *A culture of everyday credit: housekeeping, pawnbroking, and governance in Mexico City, 1750-1920*. Lincoln: University of Nebraska Press, 2006.

Freeman, John Brian. "Transnational Mechanics: Automobility in Mexico, 1895-1950." Ph.D. diss., City University of New York, 2012.

French, John D. and Daniel James. *The gendered worlds of Latin American women workers: from household and factory to the union hall and ballot box*. Durham: Duke University Press, 1997.

French, William E. *A peaceful and working people: manners, morals, and class formation in northern Mexico*. Albuquerque: University of New Mexico Press, 1996.

French-Fuller, Katharine. "Gendered invisibility, respectable cleanliness: The impact of the washing machine on daily living in post-1950 Santiago, Chile." *Journal of Women's History* Vol. 18, No. 4, pp. 79-100.

Fowler, William. "Dreams of Stability: Mexican Political Thought during the 'Forgotten Years.' An Analysis of the Beliefs of the Creole Intelligentsia (1821-1853)." *Bulletin of Latin American Research* Vol. 14, No. 3 (1995), pp. 287-312.

Galarza, Ernesto. *La Industria Eléctrica en México*. Mexico: Fondo de Cultura Económica, 1941.

Gamboa, Federico. *La Llaga*. México: E. Gómez de la Puente, Ed., 1912.

Gámez, Moisés. *Electricidad: recurso estratégico y actividades productivas. Procesos de electrificación en el norte de Mexico, siglos XIX*-XX. San Luis Potosí, Mexico: El Colegio de San Luis, 2013.

García, Jacinto S. *Memorias íntimas de México: a propósito de la revolución Mexicana*. Lima: Fondo Editorial Universidad Nacional Mayor de San Marcos, 2005.

García Peña, Ángel. *Breve estudio sobre la cantidad de fuerza motora transportable que pueden generar los principales ríos de la vertiente oriental, presentado por el Delegado de Mexico al 8º Congreso Geográfico Internacional, Coronel de Estado*

Mayor Ángel García Peña, Director de la Comisión Geográfico-Exploradora." Xalapa, Ver.: Tipografía del Gobierno del Estado, 1904.

Garner, Paul H. *British Lions and Mexican Eagles*: *Business, Politics, and Empire in the Career of Weetman Pearson in Mexico, 1889–1919*. Stanford: Stanford University Press, 2011.

_____. *Porfirio Díaz, president of Mexico*. London: Routledge, 2001.

Garza, James Alex. *The imagined underworld: sex, crime, and vice in Porfirian Mexico City*. Lincoln: University of Nebraska Press, 2007.

Garza Villareal, Gustavo. *El proceso de industrialización en la Ciudad de México (1821-1970)*. Mexico: El Colegio de México, 1985.

Giffords, Gloria Fraser. "La Postal Mexicana: Ecos Diversos." *Artes de México* 48.

Godoy Dárdano, Ernesto. *La enseñanza técnica y de la Electricidad en el Colegio del estado de Puebla durante el Porfiriato*. Puebla: Gobierno del Estado de Puebla, 1991.

Godoy, Mercedes. *When I was a girl in México*. Boston: Lothrop, Lee & Shepard Co., 1919.

Gonzalbo Aizpuru, Pilar and Milada Bazant. *Tradiciones y Conflictos: Historias de la vida cotidiana en México e Hispanoamérica*. Mexico: El Colegio de México, 2007.

Gutmann, Ludwig. *The motorman and his duties: a handbook of theory and practice for operating electric cars*. Chicago: Windsor & Kenfield Pub. Co., 1903.

Guy, Donna J. *Sex & danger in Buenos Aires: prostitution, family, and nation in Argentina*. Lincoln: University of Nebraska Press, 1991.

Hart, John M. *The silver of the Sierra Madre: John Robinson, boss Shepherd, and the people of the canyons*. Tucson: University of Arizona Press, 2008.

Hausman, W. J. and John L. Neufeld. "The rise and fall of The American & Power Company: A lesson from the past." *Electricity Journal* Vol. 10, No. 1 (1997), pp. 46-53.

Hernández Prado, José. "Porque 'un alfiler puede reventar un globo…' José María Vigil y el positivismo mexicano." *Estudios Sociológicos* Vol. 28, No. 83 (2010), pp. 561-577.

Herrera y Lazo, José. *La industria de la Generación de Fuerza hidroeléctrica, su fomento*

y reglamentación en México. Mexico City: Talleres Gráficos de la Nación, 1920.

_____. *La Comisión Nacional de Fuerza Motriz, su organización, labores y* tendencias. Mexico City: Editorial Cultura, 1924.

_____. *La Fuerza Motriz en México*. Mexico City: Talleres Gráficos de la Nación, 1927.

_____. *La industria Eléctrica, lo que al público le interesa saber*. Mexico City: Editorial Cultura, 1933.

Hershfield, Joanne. *Imagining La Chica Moderna: Women, Nation, and Visual Culture in Mexico, 1917-1936*. Durham: Duke University Press, 2008.

Iglehart, Fanny Chambers Gooch. *Face to face with the Mexicans: The domestic life, educational, social, and business ways, statesmanship and literature, legendary and general history of the Mexican people, as seen and studied by an American woman during seven years of intercourse with them*. New York: Fords, Howard & Hulbert, 1887.

Islas Bustamante, Carlos. *Manual del Motorista*. México: Tipografia de Bouligny & Schmidt Sucesores, 1908.

James, Daniel. *Doña Maria's Story: Life History, Memory, and Political Identity*. Durham, NC: Duke University Press, 2000.

Johnson, Lyman L, ed. *The Problem of order in changing societies: essays on crime and policing in Argentina and Uruguay*. Albuquerque: University of New Mexico Press, 1990.

Juárez López, José Luis. *Nacionalismo culinario: La cocina mexicana en el siglo XX*. Mexico: Consejo Nacional para la Cultura y las Artes, 2008.

Keremitsis, Dawn. "Del metate al molino: la mujer mexicana de 1910 a 1940." *Historia Mexicana* Vol. 33, No. 2 (1983), pp. 292-293.

King Goodrich, Joseph. *The coming of Mexico*. Chicago: A. C. McClurg & Co., 1913.

Kittler, Friedrich A. *Gramophone, film, typewriter*. Stanford: Stanford University Press, 1999.

Kline, Ronald and Trevor Pinch. "Users as agents of technological change: The social construction of the automobile in rural United States." *Technology and Society* 37, No. 4 (1996): pp. 763-795.

Knowlton, Robert. *Church property and the Mexican Reform, 1856-1910*. DeKalb:

Northern Illinois University Press, 1976.

Koester, Frank. "The Necaxa plant, Mexican Light and Power Co.," *Hydroelectric developments and Engineering: A practical and theoretical treatise on the development, design, construction, equipment and operation of hydroelectric transmission plants*. 2nd edition. New York: D. Van Nostrand Company, 1911, pp. *369-381*.

Kuntz-Ficker, Sandra. *Empresa extranjera y Mercado interno: El Ferrocarril Central Mexicano, 1800-1907*. Mexico: El Colegio de Mexico, 1995.

La cocina practica cosmopolita. México, D.F.: Imprenta a su Orden, 1931.

Laguerenne, Teodoro L. "Ligera descripción de la instalación hidroeléctrica de Necaxa" *Memorias de la Sociedad Científica "Antonio Alzate*." Vol. 23. Mexico: Impresora del Gobierno Federal, 1905.

Lancaster, Maud Lucas, E. W. Lancaster, and Stephen L. Coles. *Electric Cooking, heating, cleaning, etc.: A manual of electricity in the service of the home*. New York: D. Van Nostrand Co., 1914.

Lara Beautell, Cristobal. *La industria de energía* eléctrica. Mexico City: Fondo de Cultura Económica, 1953.

Lear, John. *Workers, Neighbors, and Citizens: The Revolution in Mexico City*. Lincoln, NE: University of Nebraska Press, 2001.

Leidenberger, Georg. "Los tranvías en la ciudad de Mexico desde la electrificación hasta la revolución, 1900-1911." In *Los espacios públicos de la ciudad. Siglos XVIII and XIX*, coordinated by Carlos Aguirre Anaya, Marcela Dávalos y María Amparo Ros. Mexico City: Casa Juan Pablos/Instituto de Cultura de la Ciudad de Mexico, 2002.

Lemay, J. A. Leo. *The Life of Benjamin Franklin, Volume 3: Soldier, Scientist, and Politician, 1748-1757*. Philadelphia: University of Pennsylvania Press, 2008.

Lie, Merete and Knut H. Sørensen. *Making technology our own? Domesticating technology into everyday life*. Oslo: Scandinavian University Press, 1996.

Liehr, Reinhard and Mariano Enrique Torres Bautista. *Las compañías eléctricas extranjeras en México, 1880-1960*. Puebla, Mexico: Benemérita Universidad Autónoma de Puebla, 2010.

_____. "Las Free-Standing Companies Británicas en el Mexico del Porfiriato, 1884-1911." *Historia Mexicana* Vol. 47, No. 3 (1998), pp. 605-653.

Lopez, Amanda. "The Cadaverous City: The everyday life of the dead in México City, 1875-1930." Ph.D. diss., The University of Arizona, 2010.

Mackenzie, D. A. and J. Wajcman, Eds. *The social shaping of technology: How the refrigerator got its hum*. Buckingham, England: Open University Press, 1999.

Manual de cocina practica: adaptada a paladares delicados y de buen gusto. México: Papelería "El 5 de Mayo," 1929.

Marichal, Carlos, Coord. *Las inversiones extranjeras en América Latina 1850-1930. Nuevos debates y problemas en historia económica comparada*. Mexico City: Colegio de México, Fondo de Cultura Económica, 1995.

Martínez Miranda, Elio Agustín and María de la Paz Ramos. "Funciones de los ingenieros inspectores al comienzo de las obras del complejo hidroeléctrico de Necaxa," *Historia Mexicana* 56, No. 1 (2006), pp. 231-286

Martínez Dominguez, Guillermo. "Integración y desarrollo de la industria eléctrica de Mexico. La obra 1965-1970," *El Trimestre Económico* Vol. 38, No. 150 (2) (1971), pp. 433-454.

Marx, Leo. *The Machine in the Garden*. New York: Oxford Press, 1965.

Matthews, Michael. "De Viaje: Elite Views of Modernity and the Porfirian Railway Boom." *Mexican Studies/Estudios Mexicanos* 26 (2) (2010), pp. 251-289.

_____. "Railway Culture and the Civilizing Mission in Mexico, 1876-1910." Ph.D. diss., University of Arizona, 2008.

_____. *The Civilizing Machine: A Cultural History of Mexican Railroads, 1876-1910*. Lincoln, NE: University of Nebraska Press, 2013.

Maxson, Harold R. *A practical up-to-date guide to Mexico City and vicinity with excursions to Toluca, Amecameca, Xochimilco, Cuernavaca and San Juan Teotihuacan*. Mexico City: American Book & Printing Company, 1907.

McKay, P. *Tramways and Trolleys: The Rise of Urban Mass Transport in Europe*. Princeton: Princeton University Press, 1976.

Medina Gómez, Gloria. "Introducción de la luz eléctrica a la ciudad de Oaxaca: Modernización urbana y revolución mexicana." In *Actividades, espacios e instituciones económicas durante la Revolución Mexicana*, edited by José Mario Contreras Valdez, María Eugenia Romero Ibarra, and Pablo Serrano Álvarez. Mexico: División de Estudios de Posgrado, Facultad de Economía, DGAPA-UNAM, 2004.

Mericle, Michele Jeanine. "Imaginings at the Judas Tree: The Pardon Tales of "Miss México."" M.A. thesis, The University of Arizona, 2003.

México y sus alrededores: Guía para los Viajeros. México: Tip. Luis B. Casas, 1895.

Milanesio, Natalia. "The Guardian Angels of the Domestic Economy: Housewives' responsible consumption in Peronist Argentina." *Journal of Women's History* Vol. 18, No. 3 (2006), pp. 91-117.

Moheno, Querido. *Cosas del Tio Sam*. San Antonio, TX: Talleres Tipograficos de "Revista Mexicana," 1916.

Montalvo Hernández, Gloria del Rocío. "El proceso de electrificación en San Luis Potosí, 1880-1910." MA Thesis, El Colegio de San Luis, 2010.

Moreno, Julio. *Yankee Don't Go Home! Mexican nationalism, American business culture and the shaping of Modern Mexico, 1920-1950*. Chapel Hill: University of North Carolina Press, 2003.

Moreno-Brid, Juan Carlos and Jaime Ros. *Development and growth in the Mexican economy: a historical perspective*. Oxford: Oxford University Press, 2009.

Morgan, Tony. "Proletarians, Politicos, and Patriarchs: The Use and Abuse of Cultural Customs in the Early Industrialization of Mexico City, 1880-1910." In *Rituals of rule, rituals of resistance: public celebrations and popular culture in Mexico*, edited by William H. Beezley, Cheryl English Martin, and William E. French. Wilmington, Del: SR Books, 1994.

Morus, Iwan Rhys. *Frankenstein's Children: Electricity, Exhibition and Experiment in Early-Nineteenth-Century London*. Princeton: Princeton University Press, 1998.

Moses, Jasper T. *Today in the land of tomorrow: sketches of life in México*. 2nd ed. Indianapolis: The Christian Woman's Board of Missions, 1909.

Mraz, John. *Looking for Mexico: Modern Visual Culture and National Identity*. Duke University Press, 2009.

Muñoz-Serrano, Benito. *Actualidades: recopilación de humoradas en verso, correspondientes a los asuntos del día, publicados por El País durante los meses de septiembre de 1901 a febrero ultimo por Benito Muñoz-Serrano (Khit)*. México, Editorial Católica, 1902.

Nieves, *Ramillete del Ama de Casa*. Barcelona: Luis Gili, 1935.

Ochoa, Enrique. *Feeding Mexico: the political uses of food since 1910*. Wilmington, Del:

Scholarly Resources, 2000.

Ortega Mata, Rodolfo. *Problemas económicos de la industria eléctrica*. Mexico City: Fondo de Cultura Económica, 1936.

Oudshoorn, Nelly and T. J. Pinch, *How users matter: the co-construction of users and technologies*. Cambridge, Mass: MIT Press, 2003.

Nava, Carmen and Isabel Fernández. "La campana de Dolores en el imaginario patriótico." *Boletín del Archivo General de la Nación* 6a época, No. 2 (2003), pp. 123-142.

_____. "Images of Independence in the Nineteenth Century: The *Grito de Dolores*, History and Myth," in *¡Viva Mexico! ¡Viva la Independencia! Celebrations of September 16,* edited by William H. Beezley and David E. Lorey. Wilmington, DE: SR Books, 2001.

Nervo, Amado, Gustavo Jiménez Aguirre, Yólotl Cruz, Claudia Canales, José Ricardo Chaves, and Juan Domingo Argüelles. *El libro que la vida no me dejó escribir: una antología general*. México: Fondo de Cultura Económica, 2006.

Novo, Salvador. *Cocina mexicana; o Historia gastronómica de la ciudad de México*. Mexico: Editorial Porrúa, 1967.

Nye, David E. *Electrifying America: Social Meanings of a New Technology*. Cambridge, Mass.: MIT Press, 1990.

Ochoa, Enrique. *Feeding Mexico: the political uses of food since 1910*. Wilmington, Del: Scholarly Resources, 2000.

Olcott, Jocelyn, Mary K. Vaughan, and Gabriela Cano, eds. *Sex in Revolution: Gender, Politics, and Power in Modern Mexico*. Durham: Duke University Press, 2006.

Orozco y Berra, Manuel, Coor., *Apéndice al Diccionario Universal de Historia y Geografía*, Vol. II. Mexico: Imprenta de J. M. Andrade y F. Escalante, 1856.

Ortega Mata, Rodolfo. "La electricidad hasta su nacionalización" *El Economista Mexicano* Vol. II, No. 4 (1962), pp. 426-462.

_____. *Problemas económicos de la industria eléctrica*. Mexico City: Fondo de Cultura Económica, 1936).

Oudshoorn, Nelly and Trevor Pinch. Eds. *How Users Matter: The Co-Construction of Users and Technologies*. Cambridge, Mass.: The MIT Press, 2003.

Owensby, Brian Philip. *Intimate ironies: modernity and the making of middle-class lives*

in Brazil. Stanford: Stanford University Press, 1999.

Pallares, Jacinto. "El robo de electricidad." In *Nuestra Ley Penal: Estudios prácticos y comentarios sobre el código del Distrito Federal de 1o de Abril de 1872* Vol. II. Mexico: Imprenta y Fototipia de la Secretaria de Fomento, 1907.

Parra, Alma. "Fuentes para el estudio de las primeras compañías británicas de electricidad en Mexico." *América Latina en la Historia Económica: Boletín de Fuentes, Industria Eléctrica* No. 8 (Jul.-Dic., 1997), pp. 31-37.

Parra, Porfirio. *Pacotillas* Barcelona: Tipolitografía de Salvat é Hijo, 1900.

Patiño, Emilio Alanís. "La energía en México." *Investigación Económica* Vol. 14, No. 2 (1954), pp. 163-229.

Pearson, F. S. and F. O. Blackwell. "The Necaxa plant of the Mexican Light and Power Company." *Transactions of the American Society of Civil Engineers*, Vol. LVIII (June, 1907), pp. 37-56.

Pérez Montfort, Ricardo, Alberto del Castillo Yurrita, and Pablo Piccato, eds. *Hábitos, normas y escándalo: prensa, criminalidad y drogas durante el porfiriato tardío*. México: Ciesas, 1997.

Piccato, Pablo. "El paso de Venus por el disco del sol": Criminality and Alcoholism in the Late Porfiriato." *Mexican Studies/Estudios Mexicanos* Vol. 11, No. 2 (1995), pp. 203-241.

_____. "Urbanistas, Ambulantes, and Mendigos: The Dispute for Urban Space in Mexico City, 1890-1930." In *Reconstructing Criminality in Latin America*, edited by Carlos A. Aguirre and Robert Buffington. Wilmington, DE: Scholarly Resources, Inc., 2000.

_____. El Chalequero' or the Mexican Jack the Ripper: The Meanings of Sexual Violence in Turn-of-the-Century Mexico City." *Hispanic American Historical Review* 81:3-4 (2001), pp. 623-65.

_____. "Cuidado con los Rateros: The Making of Criminals in Modern Mexico City." In *Crime and Punishment in Latin America: Law and Society Since Late Colonial Times*, edited by Carlos Aguirre and Gilbert M. Joseph. Durham: Duke University Press, 2001.

_____. *City of Suspects: Crime in Mexico City, 1900-1931*. Durham: Duke University Press, 2001.

Pilcher, Jeffrey M. "Fajitas and the Failure of Refrigerated Meatpacking in Mexico: Consumer Culture and Porfirian Capitalism." *The Americas* Vol. 60, No. 3,

Special Issue on Material Culture (2004), pp. 411-429.

_____. "Josefina Velázquez de León: Apostle of the Enchilada." In *The Human Tradition in Mexico*, edited by Jeffrey M. Pilcher. Wilmington, DE: Scholarly Resources, 2003.

_____. *Que vivan los tamales! Food and the making of Mexican identity*. Albuquerque: University of New Mexico Press, 1998.

_____. *The sausage rebellion: public health, private enterprise, and meat in Mexico City, 1890-1917*. Albuquerque: University of New Mexico Press, 2006.

Pite, R.E. "Entertaining Inequalities: Doña Petrona, Juanita Bordoy, and Domestic Work in Mid-Twentieth-Century Argentina." *Hispanic American Historical Review* 91-1 (2011), pp. 97-128.

Pletcher, David M. *Rails, mines, and progress: Seven American promoters in Mexico, 1867-1911*. Ithaca, N.Y: Cornell University Press, 1958.

Poinsett, Joel Roberts. *Notes on Mexico, Made in the Autumn of 1822*. Philadelphia: H.C. Carey and L. Lea, 1824.

Porter, Susie S. *Working Women in Mexico City: Public Discourses and Material Conditions, 1879-1931*. Tucson: University of Arizona Press, 2003.

Portuondo, Maria. "Constructing a Narrative: The History of Science and Technology in Latin America." *History Compass* 7 (2) (2009), pp. 500-522.

Postres Nestlé: Una maravilla de la Repostería Moderna. Mexico: Nestle Mexico S.A, 1940z.

Postres Nestlé, núm. 2. Mexico: Nestle Mexico S.A., 1904z.

Postres Nestlé, núm. 3. Mexico: Nestle Mexico S.A., 1940z.

Pulido Esteva, Diego. "¡A Su Salud! Sociabilidades, Libaciones y Prácticas Populares en la Ciudad de México a Principios del Siglo XX." Ph.D. diss., Colegio de México, 2012.

Pyenson, Lewis and Jean François Gauvin, eds. *The Art of Teaching Physics: The Eighteenth Century Demonstration Apparatus of Jean Antoine Nollet*. Quebec: Septentrion, 2002.

Ramírez, Santiago. *El Carbón Mineral*. Mexico: Imprenta de Francisco Díaz de León, 1882.

_____. *Informe que el ingeniero de minas Santiago Ramírez rinde a la Secretaria de Fomento, como resultado de su exploración a los distritos de Matamoros Izucar, Chiautla y Acatlán en el estado de Puebla y del estudio criadero de carbón mineral*. Mexico: Filomeno Mata, Impresor, 1881.

Recetario de Cocina Excelsior: segundo recetario de cocina. Mexico: Taller Tipográfico de la Cooperativa Excélsior, 1944.

Reséndiz Núñez, Daniel, Comp. *El sector eléctrico de México*. Mexico City: Comisión Federal de Electricidad/Fondo de Cultura Económica, 1994.

Reseña Histórica y Estadística de los Ferrocarriles de Jurisdicción Federal. México: Topografía de la Dirección General de Telégrafos Federales, 1907.

Rippy, Fred J. *Latin America and the Industrial Age*. New York: G.P. Putnam's Sons, 1947.

_____. "German Investments in Latin America" *The Journal of Business of the University of Chicago,* Vol. 21, No. 2 (1948), pp. 63-73.

_____. *British investments in Latin America, 1822-1949*: *a case study in the operations of private enterprise in retarded regions*. Minneapolis: University of Minnesota Press, 1959.

Rodriguez, Julia. "Beyond Prejudice and Pride: The Human Sciences in nineteenth and twentieth-century Latin *America." Isis* Vol. 104, No. 4 (2013) pp. 807-81.

_____. *Civilizing Argentina: Science, Medicine, and the Modern State*. Chapel Hill: The University of North Carolina Press, 2006.

Ruggiero, Kristin. *Modernity in the Flesh: Medicine, Law, and Society in Turn-of-the-Century Argentina*. Stanford: Stanford University Press, 2004.

Salvatore, Ricardo D. and Carlos Aguirre, eds. *The Birth of the Penitentiary in Latin America: Essays on Criminology, Prison Reform, and Social Control, 1830–1940*. Austin: University of Texas Press, 1996.

Salvucci, Richard J. *Politics, markets and Mexico's 'London debt,' 1823-1887*. Cambridge: Cambridge University Press, 2009.

Sanders, Nichole Marie. "Gender, welfare and the "Mexican miracle": The politics of modernization in postrevolutionary Mexico, 1937-1958." Ph.D. diss., University of California, Irvine, 2003.

Schell, Patience A. "Gender, Class, and Anxiety at the Grabiela Mistral Vocational

School, Revolutionary Mexico City." In *Sex in Revolution: Gender, Politics, and Power in Modern Mexico*, edited by Jocelyn Olcott, Mary Kay Vaughan, and Gabriela Cano. Durham: Duke University Press, 2006.

Schell, William. *Integral outsiders: the American colony in Mexico City, 1876-1911*. Wilmington, Del: Scholarly Resources, 2001.

Schwartz Cowan, Ruth. *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave*. New York: Basic Books, Inc., Publishers, 1983.

Sherratt, Harriott Wight. *Mexican Vistas seen from highways and by-ways of travel*. Chicago: Rand, McNally & Co., Publishers, 1899.

Silverstone, Roger and L. Haddon, "Design and the domestication of information and communication technologies: Technical change and everyday life." In *Communication by Design*, edited by R. Silverstone and R. Mansell. Oxford: Oxford University Press, 1996.

_____ and Eric Hirsch, eds. *Consuming Technologies: Media and Information in Domestic Spaces*. New York: Routledge, 1992.

Sodi, Demetrio. *Nuestra Ley Penal: Estudios prácticos y comentarios sobre el código del Distrito Federal de 1o de Abril de* 1872, Tomo II. Mexico: Imprenta y Fototipia de la Secretaria de Fomento, 1907.

Sørensen, Knut H. M. Aune, and M. Hatling. "Against linearity: On the cultural appropriation of science and technology." In *Between Understanding and Trust*, edited by Meinolf Dierkes and Claudia von Grote. Australia: Harwood Academic, 2000.

Speckman-Guerra, Elisa. *Crimen y castigo: legislación penal, interpretaciones de la criminalidad y administración de justicia, Ciudad de México, 1872-1910*. Mexico: El Colegio de México, 2002.

Starr, Frederick. *Mexico and the United States: A story of revolution, intervention and war*. Chicago: The Bible House, 1914.

Strasser, Susan. *Never Done: A history of American housework*. New York: Henry Holt, 1982.

Stepan, *Nancy. The hour of eugenics: race, gender, and nation in Latin America*. Ithaca, N.Y.: Cornell University Press, 1991.

Tafunnel, Xavier. "La Revolución eléctrica en América Latina." *Revista de Historia Económica* Vol. 23, Issue 3 (2011), pp. 327-359.

Tejada Portuondo, Rafael. *Guía del Motorista*: *Tratado practico del manejo de los tranvías eléctricos con ilustraciones y diagramas*. México: Herrero Hermanos Editores, 1903),

Tenenbaum, Barbara A. "Streetwise History: The Paseo de la Reforma and the Porfirian State, 1876-1910." In *Rituals of Rule, Rituals of Resistance: Public Celebrations and popular culture in Mexico*, edited by William H. Beezley, Cheryl English Martin, and William E. French. Wilmington, DE: Scholarly Resources, Inc., 1994.

_____. *The Politics of Penury: Debt and Taxes in Mexico 1821-1856*. Albuquerque: The University of New Mexico Press, 1986.

Tenorio-Trillo, Mauricio. *Mexico at the World's Fairs: Crafting a modern nation*. Berkeley: University of California Press, 1996.

_____. "1910 México City: Space and Nation in the City of the *Centenario*." In *¡Viva México! ¡Viva La Independencia! Celebrations of September 16,* edited by William H. Beezley and David Lorey. Wilmington, DE: SR Inc., 2001.

Terry, T. Philip. *Terry's México: Handbook for travelers, with two maps and twenty-five plans*. 2nd ed. Mexico: Sonora News Co., 1911.

Toledo, Hayde. "Historia social de la tecnología tranviaria en el Distrito Federal, 1898-1920." MA Thesis, Facultad de Filosofía y Letras, UNAM, 2010.

Toxqui Garay, María Aurea. ""El recreo de los amigos." Mexico City's pulquerías during the liberal Republic (1856-1911)." Ph.D. diss., The University of Arizona, 2008.

Tranvías Eléctricos de Mexico, Guía de Pasajeros a bordo de los tranvías. Mexico: Imprenta del Gobierno Federal, 1913.

Valdes, Maximiano. *De Mexico a Necaxa por el "Conde de Fox*." Mexico: Compañia Impresora Mexicana, 1919.

Canciones Modernas. Mexico: A. Vanegas Arroyo, 1906.

Vaughan, Mary Kay. "Modernizing Patriarchy: State policies, rural households, and women in Mexico, 1930s-1940." In *Hidden Histories of Gender and the State in Latin America,* edited by Elizabeth Dore and Maxine Molyneu. Durham: Duke University Press, 2000.

Velázquez de León, Josefina. *Cocina al minuto*. Mexico: Ediciones Velázquez de León, 1956.

_____. *Cocina Instantánea: Ideas practicas para preparar*

rápidamente con latas y productos preparados platillos de buen sabor, dulces y repostería. Mexico: Ediciones Velázquez de León, 1949.

_____. *Cocina Rápida para la Mujer Moderna: Selección de recetas de rápida confección, buen sabor y bonita presentación, propias para la mujer moderna* Mexico: Ediciones Velázquez de León, 1940z.

_____. *Como cocinar en los aparatos modernos*. Vol. I, 2nd ed. México: Ediciones Velázquez de León, 1950.

_____. *Como cocinar en los aparatos modernos*. Vol. II. México: Ediciones Velázquez de León, 1953.

_____. *Fuertomate en la cocina, recetario núm. 1*. Mexico: Distribuidora del Fuerte, S.A., 1961.

_____. *La Cocina de la Recién Casada*. Vol I., 2nd ed. Mexico: Ediciones J. Velázquez de León, 1962.

_____. *La Cocina de la Recién Casada*. Vol. I, 3rd ed. Mexico: Ediciones J. Velázquez de León, 1968.

_____. *La Cocina de la Recién Casada*. Vol. II. 2nd ed. Mexico: Ediciones J. Velázquez de León, 1962.

_____. *Manual práctico de cocina y repostería*. México: Editorial, 1936.

_____. *Manual practico de cocina y reposteria*. 3rd ed. Vol. I. Mexico: Editorial J. Velázquez de León, 1943.

Vidrio C., Manuel. "Sistemas de transporte y expansión urbana: los tranvías." In *Ciudad de México: Ensayo de Construcción de una Historia,* coordinated by Alejandra Moreno Toscano. México, Instituto Nacional de Antropología e Historia, 1978.

Vilqueira Albán, Juan Pedro. *¿Relajados o Reprimidos? Diversiones públicos y vida social en la ciudad de México durante el Siglo de las Luces*. Mexico City: Fondo de Cultura Económica, 1987.

Vincent, Raplh Waterman. *Mexico today and tomorrow; an outline of the present earning power and future possibilities of her railroad systems. Facts, figures and suggestions regarding the principal traffic producing centers*. New York, New York News Bureau Association 1906.

Voekel, Pamela. "Peeing on the Palace: Bodily Resistance to Bourbon Reforms in Mexico City," *Journal of Historical Sociology* Vol.5, No. 2 (1992) 183-208.

von Barloewen, Constantin. *Cultural history and modernity in Latin America: technology and culture in the Andes Region*. Providence, R.I.: Berghahn. 1995.

Wakild, Emily. "Naturalizing Modernity: Urban Parks, Public Gardens and Drainage Projects in Porfirian Mexico City." *Mexican Studies/Estudios Mexicanos* Vol. 23, Issue 1 (Winter 2007), pp. 101-123.

Ward, Henry George. *Mexico in 1827*. London: H. Colburn, 1828.

Wasserman, Mark. *Capitalists, Caciques, and Revolution: The Native Elite and Foreign enterprise in Chihuahua, Mexico, 1854-1911*. Chapel Hill: University of North Carolina, 1984.

Weber, Jonathan Michael. "Hustling the old Mexico aside: Creating a modern México City through medicine, public health and technology in the Porfiriato, 1887-1913." Ph.D. diss., Florida State University, 2013.

Weis, Roberto. *Bakers and Basques: A Social History of Bread in Mexico*. Albuquerque: University of New Mexico Press, 2012.

Wells, Allen. *Yucatán's Gilded Age: Haciendas, Henequen, and International Harvester, 1860 –1915*. Albuquerque: University of New Mexico Press, 1985.

Winter, Nevin Otto. *Mexico and her people of to-day: an account of the customs, characteristics, amusements, history and advancement of the Mexicans, and the development of resources of their country*. Boston: The Colonial Press, 1907.

Wionczek, Miguel S. "The State and the Electric-Power Industry in Mexico, 1896-1965." *Business History Review* Vol. 39, No. 4, Special Latin American Issue (1965), pp. 527-556.

Wolfe, Joel. *Working Women, Working Men: São Paulo and the Rise of Brazil's Industrial Working Class, 1900-1955*. Durham: Duke University Press, 1993.

Wolfe, Mikael. "Water and Revolution: The politics, ecology and technology of agrarian reform in 'La Laguna,' Mexico." Ph.D. diss., The University of Chicago, 2009.

Wood, Andrew G. "Blind Men and Fallen Women: Notes on Modernity and Golden Age Mexican Cinema," *Post Identity* Vol. 3, No. 1 (2001), pp. 11-24.

Yturbide de Limantour, Virginia. *Enciclopedia del Hogar: La Personalidad de una Casa*. Vol. VII. Mexico: Taller Tipográfico de la Cooperativa Excélsior, 1946.

Zea, Leopoldo. *El positivismo en Mexico*. Mexico: El Colegio de México, 1943.